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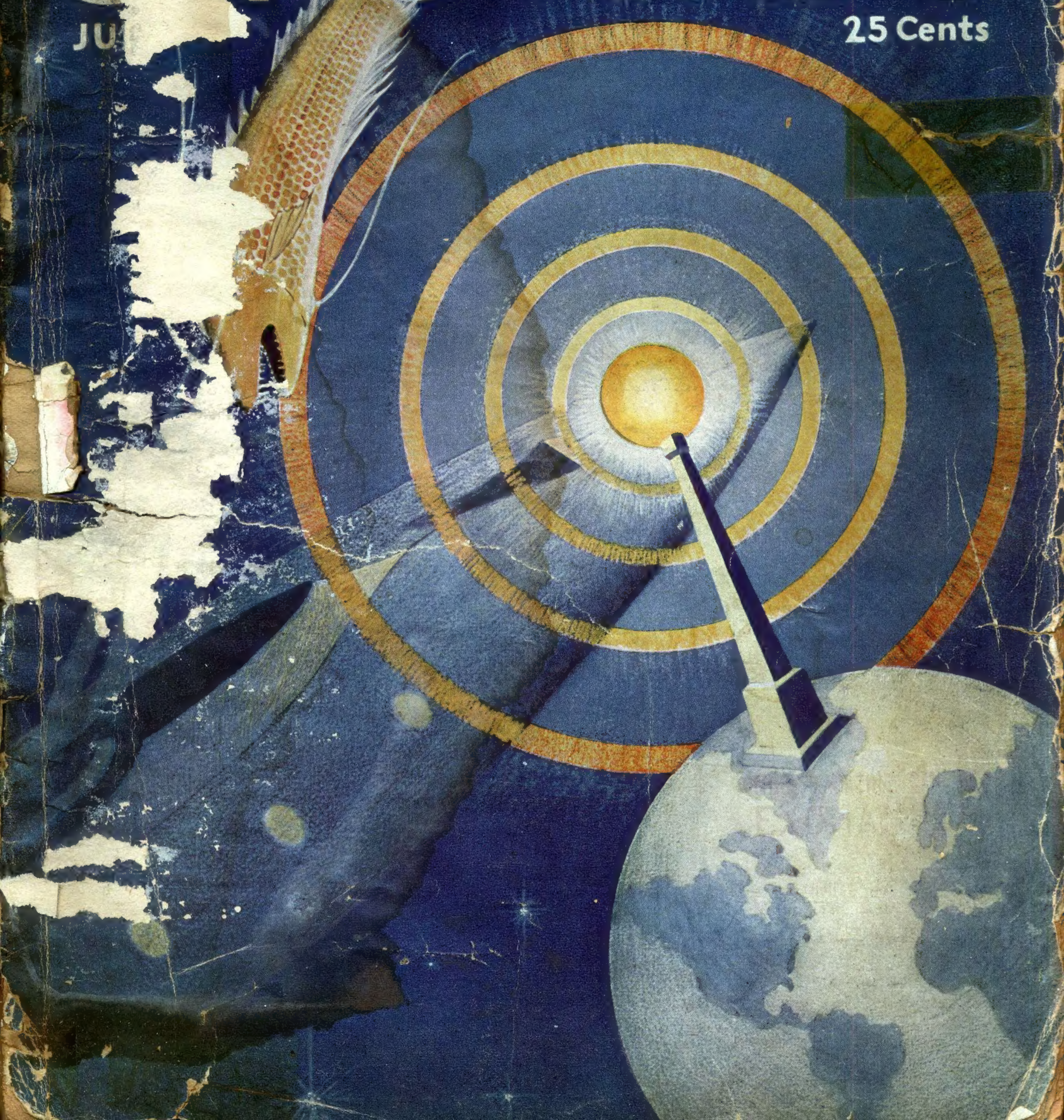

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23	1140	40	682
24	1112	41	657
25	1085	42	632
26	1057	43	607
27	1030	44	583
28	1003	45	559
29	976	46	535
30	948	47	512
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AMAZING STORIES

Science Fiction

Vol. 8 **July, 1933** **No. 4**

In Our August Issue

THE METEOR-MEN OF PLAA, by Henry J. Koskos. We now have the pleasure of introducing to our readers an author who has not hitherto contributed to our pages. Elsewhere in this issue we have given a review of a very valuable book on meteorites. It is interesting to find that in this story meteorites play their part, so that we may feel that the story is a comment on the book, or perhaps that the book is a comment on the story.

CHILDREN OF THE GREAT MAGMA, by Walter Kateley. We are glad to give a story by this author who may be justly called a favorite with our readers, who certainly will find plenty of adventure in the narration of the oasis in the Antarctic, and we think that Mr. Kateley is giving them one of his best stories. We do not want to say too much about it, but will leave it to our readers to peruse it in its novelty.

THE ESSENCE OF LIFE, by F. Pragnell. We are again favored by a capital story by an English author. Stories from the "Old Country" have met with considerable approval, and we feel that it is a matter of special interest to give our readers stories from abroad. There is discernible a slight difference in the touch, as we may call it, of the writer, depending on which nation he belongs to. This story is of the interplanetary type, with visitors from a distant planet taking up the problem of the destiny of our earth.

And Other Unusual Science Fiction

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by A. P. Nelson

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Over the brink of the canyon they hurtled at what seemed a dizzy speed. Six-shooter in hand, Bob gradually caught up to the fleeing rifleman. *Crack! Wham!* Two shots split the awed hush of the canyon and . . .

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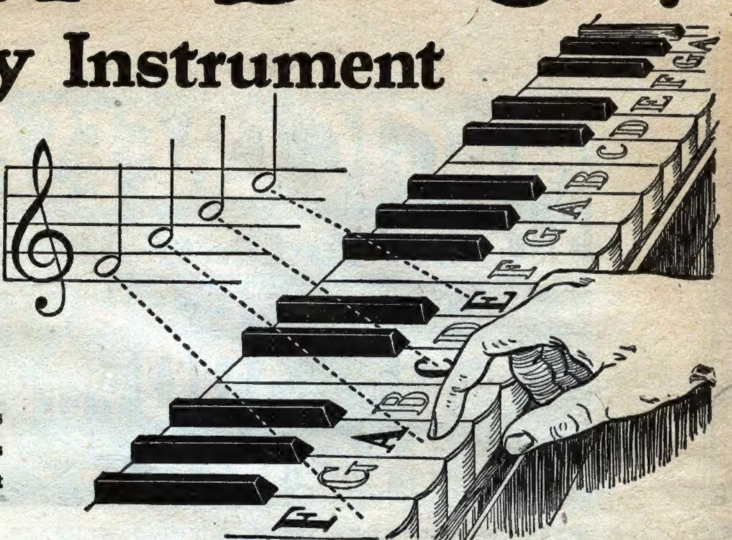

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Whether you take up piano, violin, 'cello, organ, saxophone, or *any other instrument* you find that every single thing you need to know is explained in detail. And the explanation is always *practical.* Little theory—plenty of *accomplishment.* That is why students of this course get ahead *twice as fast — three times as fast*—as those who study old-time plodding methods! Read some of the letters on this page and see for yourself! They don't guarantee that *everyone* can become a good player in three or four months; but they are written by people who didn't know any more about playing when they started the U. S. course than you do now. (Note that if you *do* know something about music now the U. S. School of Music grades you and instructs you accordingly.)

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Mandolin
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Sight Singing
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VOLUME
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T. O'CONOR SLOANE, Ph.D., *Editor*

Editorial and General Offices: 222 West 39th Street, New York, N. Y.

Extravagant Fiction Today . . . . ***Cold Fact Tomorrow***

The Candle

By T. O'Conor Sloane, Ph.D.

ONE of the convenient ways of producing light was the candle, which may be defined as a cotton wick imbedded in an approximately cylindrical mass of solid grease or wax. Various materials were used for the combustible element. Sometimes candles were made by dipping the wicks hanging vertically down from a rod into melted tallow and increasing the thickness by repeated dippings. These were called dipped candles. Others were made by stretching the wicks through the middle of a slightly coned tube of tin and pouring the wax into it and letting it harden there and then pulling out the candle. The slight coning of the tube helped the withdrawing. These were moulded candles. But there was yet another way of making candles by which one of the aristocrats of the candle world was produced. Bees' wax was rolled out into sheets like pie crust. This was wrapped around the wick surrounding it and wrapped over and over again in a spiral sheet, thus getting rid of all the dipping and molding.

The exact action described for the oil lamp takes place in a candle, after the flame has liquefied the grease or wax which lies melted in the little cup which forms by the heat of the flame. By capillarity and atmospheric pressure the liquid material is pumped up by the wick and supplies it with fuel.

The old time candles used to give a good deal of trouble by accumulating a mass of very disagreeable carbon on the end of the wick, which cut down their illumination and had to be periodically removed. Some people were able to do it with their finger and thumb, but this very disagreeable and dirty operation was avoided by having a scissors-like affair by which the snuff, which it was called, was removed every little while. But when we burn a first class candle today, you will find that the wick curls over very nicely and burns itself off so that snuffing is never required.

THIS was due to a very great improvement in the candle. The invention consisted in plaiting the wick instead of twisting it so that as it burned there was a warping action which curled it over and the end burned off in the atmosphere. But even then there was loose ash to be got rid of, so the wicks were dipped in a solution of borax and this melted into a sort of glass and instead of the loose ash a lot of little beads were formed which were never noticed.

It may seem that a candle was a very inadequate topic for the great Faraday to select for a scientific lecture. If there were not the limitations of space that the writer is subject to, it would be surprising to show how much could be said about this little-used producer of artificial light. In the process of the supply of fuel for combustion there is involved capillarity, the action of films, the action we see in the very marvellous material of the soap bubble. Certainly an air tight bag made out of water is a wonderful thing, and that is just what the soap bubble is.

The film can solve problems in geometry. It is very elastic. Therefore it tends to shrink to the smallest size possible. We all have observed the shrinkage of a soap bubble when the pipe on which it is blown is removed from the mouth. The elasticity of the film causes it to take the smallest area; it ends up by forming a flat film across the mouth of the pipe. Its adhesion to the edge of the pipe bowl prevents further shrinking—it would shrink more if it could.

If we tie a small loop in a bit of fine thread, wet it in the soap solution, it can be floated in the film that lies across the mouth of the pipe. The film within the loop is to be broken by touching it with a hot bit of wire. A needle will answer. It need not be very hot. The loop will open up into a perfect circle, or nearly perfect. It is proved in geometry that for a given circumference the circle has the largest area. Therefore by forming a circle the loop reduces the area of the film to as great an extent as possible, an illustration of the proposition in geometry.

There are a number of experiments that can be done with soap-bubble film which are very beautiful, especially when shown with a magic lantern. A soap bubble blown on a pipe bowl may be shown on the screen four or more feet in diameter, in the most beautiful colors, due to the interference of light, again giving a demonstration in physics.

And this is the material of the pistons of the multitude of suction pumps in the wick of a lamp or candle. There is also a secondary motion in the film owing to the variation in heat.

There are some things which a film will be attracted by, which vary for different materials. Water wets glass, because its surface is attracted by it. If we put water in a tumbler it will try to rise at the edge. As it does this it tries to pull the water in the glass up towards the top. The weight of the water is so great that the film can only pull it up a minute distance. If the tumbler were smaller the water would rise higher. This brings out a law of geometry. If we have two objects of identical shape but of different sizes the volume will vary with the cube of the linear dimensions. So the smaller the tube is, the higher the water at its edge will be pulled up by the action of the film.

In the burning candle we have a multitude of tubes of minute diameter, filled with the liquid grease—kept in the liquid state by the heat of the candle flame. The film on the top of each little tube keeps pulling away at the cotton of the wick and rises. As it does this atmospheric pressure forces the melted wax to rise and follow it, and to keep the wick supplied with liquid wax. The wax is burned in the candle flame, and the little films keep at their work of pulling at the cotton of the wick, and the grease is kept rising to be burned. The films are pistons—the atmospheric pressure causes the melted wax to follow them as they rise.

Now we have the little microscopic films trying to rise through the pores of the wick, and enabled to do so because the atmospheric pressure pushes the melted grease we may call it, following the films to the upper part of the wick. It is a sort of reproduction of the suction pumps, or of the "straw" in the tumbler of lemonade.

The hot flames of the wick melts the material of the candle at its top. Naturally it melts it most in the middle of the top; there is where the liquid fuel, for that is what the melted wax is, lies in a sort of cup, which the heat of the flame had produced in the candle top, the cup being deepest at the hottest point, which is around the protruding wick. And when the candle is burning what have we got?

WE have a perfect reproduction of the ancient chimneyless lamp. The top of the candle melted into a cup represents the font or reservoir. The liquid wax represents the oil, the capillarity or film action does its work exactly as in the old time lamp of our forefathers.

Now comes the question of why the candle burns and gives light. So far we have considered physics and geometry; now we are to take chemistry into consideration, with a further appeal to physics. It is fair to say that there are things about the candle that are still open to surmise.

The match is applied and the wick, or rather the wax saturating it catches fire. The flame is small for a few seconds until the wax is fed more rapidly into the wick, and the flame attains its full dimensions in a few seconds. The plaited wick bends over, its end projects into the air and at a red heat burns away with the utmost regularity. Sometimes you can see little glassy globules of borax, which fuse with the ash and thus get rid of it. The candle burns thus to the end.

The object of a candle is to give light, and this it has done for many generations. Like some other old things it surpasses in its effects the modern ones. It is impressive to realize that it would require a great number of candles, fifty or more to give the light of a fifty watt electric light. But many consider that the effect of the candles is more attractive.

Illuminating gas was originally made by heating coal to a high heat, which caused it to evolve a mixture of gases, principally compounds of hydrogen and carbon. The gas thus produced was collected in gasholders and distributed through cast iron pipes.

The candle is a miniature gas-works. The melted wax is drawn up into the pores of the wick; the heat of the flame decomposes it generating combustible gases. These rise from the wick and pass out from its sides and burn. The burning takes place on the outside of the flame. If you hold a piece of glass across the flame you will see that it is hollow. The interior is a little gasholder.

With a glass tube the unburnt gas can be drawn from the inside of the flame and will burn quietly, if lighted at the end of the tube.

THE END

Unto Us a Child is Born

By David H. Keller, M. D.

THOSE who know Dr. Keller personally feel that he is imbued with the sentiments of true humanity, and in many of his stories there is a message brought to us in the most impressive way—yet blending in with and being an integral part of his story, so that the message in question comes with all the more force, because it is so shadowed over by his nice narration. With this story we have the touch of nature which we are sure will appeal to our readers.

Illustrated by MOREY

Foreword

THE Earl of Birkenhead in his recent book, THE WORLD IN 2030, gives his idea of the life of that time and presents, in a most matter of fact way, his opinion of the changes which will take place in the very short space of a hundred years.

Even more remarkable than his conceptions is the fact that the words are the sober statements of a prominent scientist and sociologist. They are not uttered with the fantastic manner and pseudo-scientific language of some of our modern prophets, but, rather, in a dull, prosaic delivery.

The reader is forced, by the very manner in which the subject is presented, to feel that such changes in our social and economic life may take place. After all, they are not greatly different, in the wonder element, from the changes of the last one hundred years.

Yet, throughout the reading of this prophecy, the student of human relations is forced to feel, with a certain uneasiness, that the author has become so intent upon the marvelous, that he has tended to overlook the fact that the people of 2030, in spite of every scientific gain, will still be human beings, and that, because of their being human beings, certain of their reactions will be very similar to those of their ancestors.

So we can well ask ourselves just what these people of this new year of 2030 will be thinking, just how they will be reacting to the changes of a super-scientific era? Will the emotions be wiped out? or will men and women still react to beauty, the love of life, the fear of death, and the clinging fingers of a little child?

JACOB HUBLER, seventh of that name and direct descendant of that Jacobus Hubelaire, who had emigrated from Strassburg to Pennsylvania in 1740, had at last earned for himself a very satisfactory place in life. As Government Official, Class D, Division 7, No. 4829, Gross Number 25978432, he was now entitled to maintenance of the 5th type, which station made a man feel very comfortable.

He had earned that position by his inventions which made possible the artificial production of all food supplies in the individual home. Prior to his work in this dietary field, large laboratories in every city had produced synthetic food and meats, grown in large test tubes. The method was adequate in every way to the needs of the populace, but the manner of distribution was still antiquated. Hubler perfected a small but complete production laboratory, not much larger than the electric refrigerators of the past century. His product in its preparation was entirely automatic and practically foolproof. It would generate, day by day, and year by year, a complete and attractive food supply for a family of two. It not only created the food, but there was an auxiliary machine which prepared it for the table in any form desired by the consumer. All that was necessary was the selection of one of the twenty-five menus and the pressing of the proper control button.

The inventions became very popular with the type of women who still took pride in their home life; and when he added a service unit which automatically served the meal, removed it and washed the dishes, it was more than most women could resist. Thousands of women ceased to eat at the community restaurants and accepted home meals as an ultra-refinement. Hubler's name became a household shibboleth. The woman, who had his three units in her home, could serve three meals a day with no greater effort than the pressing of fifteen push buttons. It was ability as an inventor, that placed Hubler in Class D. Division 7. The promotion carried with it certain rewards. It entitled him to complete support for the rest of his life, and it gave him the right to prolong that life to the age of one hundred and fifty years if he so desired. Most valuable of all, it gave him permission to marry.

Laws, Laws and More Laws

YEARS before, the State, realizing the important value of recent discoveries, passed laws which made the nation, rather than the individual, the sole owner and beneficiary of all inventions, especially those pertaining to the comfort of the individual, the welfare of the Commonwealth and the prolongation of life. Thus, the age of usefulness was rapidly advanced to an average expectancy of one hundred and fifty years, but only those who, by their performances, showed that they were of real value to the nation, were allowed to live on.

Similarly, the right to marry and have one child was carefully guarded by the State. Strict laws of biogenesis had been followed for three generations, and, as a result, the prisons and the hospitals for the abnormals had been made useless. These had been converted into nurseries and adolescent homes. Thus, a man and woman, under the most strict supervision, could marry and have one child, but only the most worthy were accorded that right.

However, if a man showed a real value to the nation, and it was determined that his child would also be of value, then he was allowed to marry, provided a suitable and scientifically proper woman could be found for his wife. No couple could have a second child till the first one had reached maturity and had been found to be normal in every way.

Hubler, at the age of sixty, was told that he could marry. He was rather thrilled at the news. During the last few years permits had not been plentiful. With the prolongation of life and the increase of efficiency it was found best not to have too many citizens. So, for twenty years permission to marry had been given only to the men and women of the highest type.

Thus, it was really an honor to marry. Hubler talked it all over with his first assistant, Ruth Fanning. She had worked at his elbow for twenty-five years and was nearly as old as he was. She, too, had ambitions.

"I think that it is wonderful, Mr. Hubler," she said. "You deserve the honor if any man does. Your inventions have made women desire homes and want to spend some time in them, and what is the use of having a home without a husband and a child?"

"It is kind of you to say that, Miss Fanning," the inventor replied. "You realize that much of the work would never have been done without your help and suggestions. I am proud of the honor, but I am not at all certain that I will ever marry. Just having the right is not all. They have to find a complimentary female for me."

"Oh! You are too easily discouraged. You, no doubt, will fall into an unusual group, but there will be some women in that group, and I am sure that one of them will be glad to have you for a husband."

"I hope so," he said, rather pessimistically. As an inventor of service units for modern kitchens he was bravery personified, but when it came to marriage, why, that was something different.

He only worked an hour a day, five days a week. Nevertheless, it was thought advisable to give him a month's vacation, during which time he was to take the various examinations and prepare for married life. On the second day of his liberty, he drove his car to the Central Marriage Testing Bureau, and, with more than a slight degree of hesitation, he entered the main office with all his credentials.

The Head of the Bureau explained the procedure to him.

"This may seem very complicated to you, but, in reality, it is simple. We examine you in every way and correlate the results. We then change everything into a mathematical formula, and this works out your final classification. After that all that is necessary is to find a woman with the same classification, have you meet one another; if you desire to be husband and wife we will allow you to marry. Of course, it takes time, Even the development of your personality—the taking of pictures and their proper study takes several days."

"One question," asked Hubler. "After I am typed, do I have to marry the woman you select for me?"

"Not at all. We give you a list of the unmarried eligibles of your special type number. Any one of these you select will be satisfactory to us."

"And the old emotion, love, does not enter into it? You see, I do not know. I am only asking for information; but in one of the old books I have, it speaks of men and women falling in love."

The scientist looked stern.

"That is the way it used to be. That kind of love produced the feeble minded, the epileptic, the dullard, and occasionally a genius. Under the modern method the birth and maturity of an abnormal child is not possible. You want your child to be perfect, do you not?"

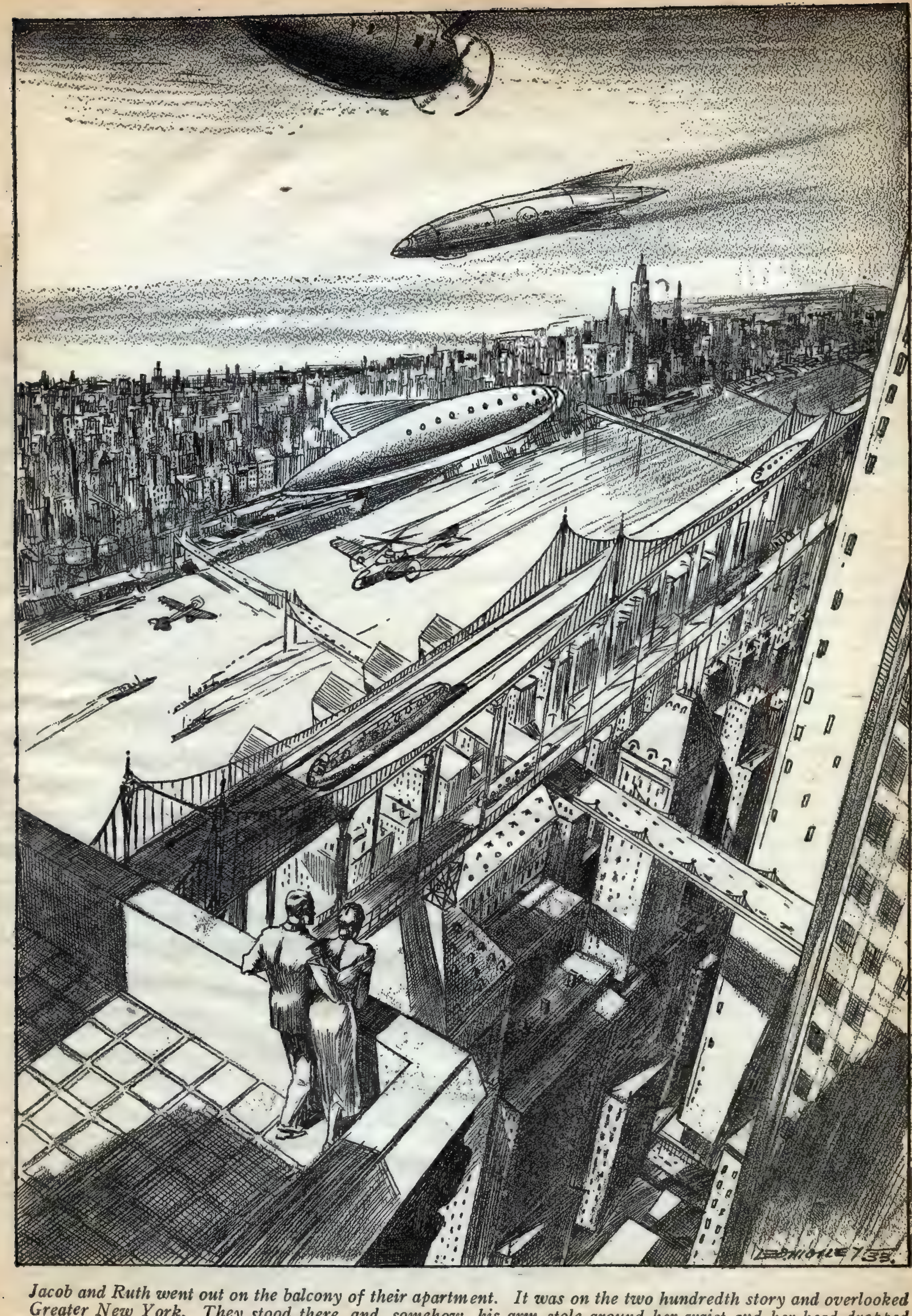
"Of course! What father would want anything else?"

"Then, do not allow yourself to fall in love, as your forefathers did."

Personality

FOR the next week Jacob Hubler was an interested participant in the typing of his personality and body. Since he was an inventor, every step of the process was explained to him. At last all the results were ready for the co-ordination machine. This was the one which produced the final mathematical rating. Buttons were pressed, cogwheels whirred, automatic type clicked, and at last a paper came out of the lower slot. The Head of the Bureau took it and studied it very seriously and finally said,

"Just as I thought, gentlemen; this is a new type, and I believe the one we have been anxiously looking for. It is positively new and adds a novel group to our known dominant factors. Would you like to look at it, Mr. Hubler?"


LEONHOLLE '35.

Jacob and Ruth went out on the balcony of their apartment. It was on the two hundredth story and overlooked Greater New York. They stood there, and, somehow, his arm stole around her waist and her head dropped on his shoulder.

The inventor took the white pasteboard and read,

TYPE, Q—GROUP, X—DIVISION, 35—***

"You notice that it is a three star card?" remarked the Head. "In the last fifty years we have had only the three star card occur nine times and no one has ever had as high a rating as 35."

"What does it mean?" asked the puzzled Hubler.

"It means that we can be certain that your child will be a philosopher, and at present the country needs one or two philosophers rather badly. Those we have are growing old and are not as inspirational as we should like them to be."

"Then I can marry and have one child?"

"No. That is the unfortunate part of it. You are a new type, and, consequently, there are no women of that type to introduce you to."

"Then my right to marry is just a hollow mockery?"

"Yes. You are so strongly dominant that it would be absolutely wrong for you to marry into another type. Still, the matter is not at all hopeless. We are making examinations every day and we may find your type at any time."

"How many variations are there?"

"Over seven millions."

"Then, I might as well go back to work."

"No, go ahead with your month's vacation. We will make a special study of the female applicants from now on, and we may be able to find one for you. We may even shade the results a trifle and give you a break. Of course, that would be a pure experiment, and might result disastrously."

Thirteen days later Jacob Hubler received orders to report at once to the Marriage Bureau. The Head of the Department was all excitement. He said,

"A most unusual thing happened yesterday. We have been testing and typing a very extraordinary woman and we suspected from the preliminary examinations that something novel would result. Her license to marry was over twenty years old, but she had never been tested. She explained that by saying that the man she wanted to marry did not have a permit; so, she decided to wait for him. A month ago he received his permit; so, she decided to be typed. To our surprise, she developed the same type and group you did, the new one. The only difference is that she is a ****star person while you are a *** one. She is the only **** star one we have ever had. Four stars show a wonderful mental maturity. The mating should produce the finest kind of a philosopher. We did not tell her about you. Thought it would be best to talk it over with you first. It is most unusual."

"It certainly is odd," replied the inventor. "What is her serial number?"

Ruth Fanning—the Baby

"GOVERNMENT Official, Class D, Division 7, No. 4830, Gross Number, 259799987. Her name is Ruth Fanning. Ever hear of her?"

"Slightly." The inventor smiled. "That woman has been my first assistant for a number of years. I could have told you offhand, without any instrumentation, that she was a four star personality. But I never thought of marrying her."

"She is in the next room. Suppose you go in and talk matters over with her?"

Hubler was far more embarrassed than the woman who was waiting for him.

"This is a great surprise to me, Ruth," he stammered.

"It is not to me," was her calm reply. "I had an idea that it would be like this."

"And you are willing to marry me?"

"Certainly! What did you think I had been waiting for all these years? I could not marry you till you had your permit, and were typed, could I?"

"But how did you know we were of the same type?"

"Womanly intuition," was her smiling reply.

They told the head of the bureau that they were willing to marry. After working together it seemed the proper and natural thing to do. He gave them the proper papers, they received the general treatment and started life in a two person apartment.

The Hublers returned to their work. Life was very much the same as it had been, perhaps a little more intimate, more in unison than before, but, in a large way, not much different. They were living in a two person apartment instead of two one person apartments, but standardization had reached the point which made all apartments very much the same, irrespective of the number of occupants. They continued to work their hour a day, five days a week, spending the other hours in the pursuit of happiness and culture. After having worked together for twenty-five years, it was hard to put into effect any new or very novel social pattern of behavior.

In the course of time their child was born in a Government hospital. A serial number was tattoed on his back and he was transferred to a Government nursery, for the care of the infant was felt to be one of the most important duties of the Commonwealth. What use to produce babies one hundred percent perfect and then have everything spoiled by an untrained mother! Why entrust this most delicate period of existence to the unskilled human mother, when it could be given with perfect confidence to a perfect machine? Thus, for the first two years of a child's life, it was cared for by machinery which did everything necessary for the welfare of the young citizen and did it in a perfect and standardized manner.

The Hublers never saw the child. It was believed that much unhappiness was caused by the surplus affection of the mother; so, the law provided that in these vital years there be a complete separation of parent and child. However, reports of the growth of the child were sent by mail every month and, at the end of the first and second years, photographs were taken and sent to the Hublers. The proud parents placed these in a baby book. If they fretted over not being permitted to see their child, they did not confess it to each other;

they realized the advantage of such a life to their son and were willing to make any sacrifices necessary for the future welfare of the baby.

At two years the Hubler boy was walking, talking and able to dress and undress himself. He had an intellectual quotient of three hundred which meant a mental age of six years. At that time he was taken out of the nursery kindergarten and placed in the grade school. There, all the teaching was done by machinery, standardized in every respect. Contact between the young pupils and older adults was rare. While there were periods of relaxation and play for the young students, life as a whole, was rather serious.

The education was varied according to the predetermined future of the child. If a boy was to become a musician, why give him the preliminary training necessary for the development of a scientist? Thus, each child became a specialist early in life, and many valuable years of existence were saved which had been wasted a century before.

The Hubler boy advanced rapidly. At eight years he was past the help of machine instructors. From then on he received the personal guidance of the few remaining philosophers, for it was early found that his mind was suited for philosophy and not for very much else. At ten he was a beautiful boy, but such a deep thinker about things which no one else had ever tried to think of before, that he was both a trial and an inspiration to his professors.

Twelve Years Old—The Meeting

AT the age of twelve his maturity was recognized, and it was thought advisable to give him a name, make him a full citizen and assign him to a government position. The parents were asked to select a name, and naturally, they selected Jacob Hubler, Junior. They were delighted when they were told that he had been made Assistant Professor of Philosophy in the National University, and given full citizenship. A free unit of society, he could now do as he wished with his time, the only restriction being in the hour a day five days a week rule for all government employees. The first thing that he decided to do was to visit his parents.

So far they had not seen him.

But they had prepared for the happy event by moving into a three person apartment. It was very much like their two person apartment only a little larger and with an extra bedroom.

Jacob and Ruth Hubler could hardly wait for their son's arrival. They had his baby book out on the table; they wanted to tell him of their marriage, show him the reports and his baby pictures. They wanted him to know what his birth had meant to them and how they had loved him all these years. They did not look a day older than they had looked thirteen years ago but, somehow, they felt more important and quite advanced in years.

Their boy was coming home to them!

Their son! The culmination of nearly a century.

At last, he came. A young man with a beautiful body and a wonderful intelligence. He greeted them without emotion, talked to them without effort. Recognizing them as his parents, he spoke only of the debt the individual owed to the state. He was courteous and polite, but, in some way, he did not seem to be interested in the things they were interested in. Jacob, Senior spoke of his new household inventions; Ruth told of her part in the work. He, the young philosopher, looked a trifle bored and talked of Erkenntnisstheorie and the undue subjectivity of temper. At last he rose from his chair.

"I Must Go to China"

"I must go," he said in a tone of polite apology. "I have an important engagement with a philosopher in China. I must take the next Oriental air machine for Canton. He is an old man and it is very important that I confer with him before he dies."

The mother put her hand on his shoulder and whispered timidly,

"Won't you spend the night with us, Jacob? I made your bed myself, and your room is all ready."

"I am sorry, but I have made this appointment and must go."

"Well, come again and as often as you can," said the father rather cheerily. "Always glad to see you, my boy."

Jacob and Ruth went out on the balcony of their apartment. It was on the two hundredth story and overlooked Greater New York. They stood there, and, somehow, his arm stole around her waist and her head dropped on his shoulder. He touched her cheek as he whispered,

"That is a fine boy. Sure it is great to be a father."

She shivered in his arms.

An Important Communication and the Result

"I am cold," she said. "The autumn is past and there is the chill of winter in the air. If you will pardon me, I will go to bed."

For a long time, Jacob stood there on the balcony, alone.

Once he was back in the living room he took from his pocket a Government communication. It was from the Child Permit Department.

> "YOUR SON, JACOB HUBLER, JR. HAS FULFILLED IN EVERY WAY THE EXPECTATION OF HIS PRENATAL CHARTS. AS A PHILOSOPHER HE IS A SUCCESS. BUREAU OF STATISTICS ADVISE US THAT THEY NEED SEVERAL MORE PHILOSOPHERS. THIS LETTER IS YOUR OFFICIAL PERMIT TO HAVE ANOTHER SON. REPLY AT ONCE DESIRE OF YOUR WIFE AND SELF CONCERNING THIS."

He read it over several times. At first it seemed to

(*Continued on Page* 344)

Hibernation

By Abner J. Gelula

Author of "Automaton"

IMAGINE the effect of being put to sleep for a century or more and being awakened at any desired time and resuming your life in a new surrounding. Imagine this applied to the life of this world of ours by governmental power. What may we suppose would happen? The author gives us the answer in a very interesting way, a way with which our readers are familiar from preceding stories by him.

Illustrated by MOREY

IT was a pity he had to die so soon . . . so young . . . scarcely thirty . . . with a brilliant future . . . what a pity . . .

The muddled brain of Professor Gordon Anderson fought for consciousness. The strange mental lethargy that struggled for control was fast losing its grip. His agonizing drop into oblivion had seared a lasting mark upon his memory, and the weird peacefulness that now possessed him, seemed only to assure his distorted reason that this phenomenon he was viewing in his mind was the calm of death.

He made no effort to move. To open his eyes was too much of an effort. The utter serenity that robbed him of physical will-power permitted only wild meanderings of the mind—that death had cut short a career bright with hope at the very prime of life!

A delirious self-sympathy obsessed him. He cursed the reckless confidence with which he had demonstrated his discovery before a group of colleagues. His Discovery! That should call for a laugh! He had demonstrated his failure! How dramatically he had poised the hypodermic! How he had feigned the pain of the self-inflicted needle entering his arm! It was a great show he had presented. Then the agony of the chemical taking its fatal effect . . . something not on the program . . . But it was mercifully swift . . . that was the last he could remember.

Still Alive

GRADUALLY his mind cleared. Thoughts became more coherent. He became sensible of his physical self. And with consciousness came panic. Cautiously he moved a finger against his thigh. He could feel it! Slowly he moved his hand toward his chest. An increasing alarm over the situation in which he believed himself sent his heart pounding wildly. He was breathing! He was alive! . . .

Where was he? Had they buried him thinking he was dead? That was it! He had proved by his own casualty that it was possible to suspend animation, but his very colleagues were too ignorant to recognize symptoms of the fact! A rage swept over him to think that Fate should thus cast him aside—at the very brink of a discovery so momentous!

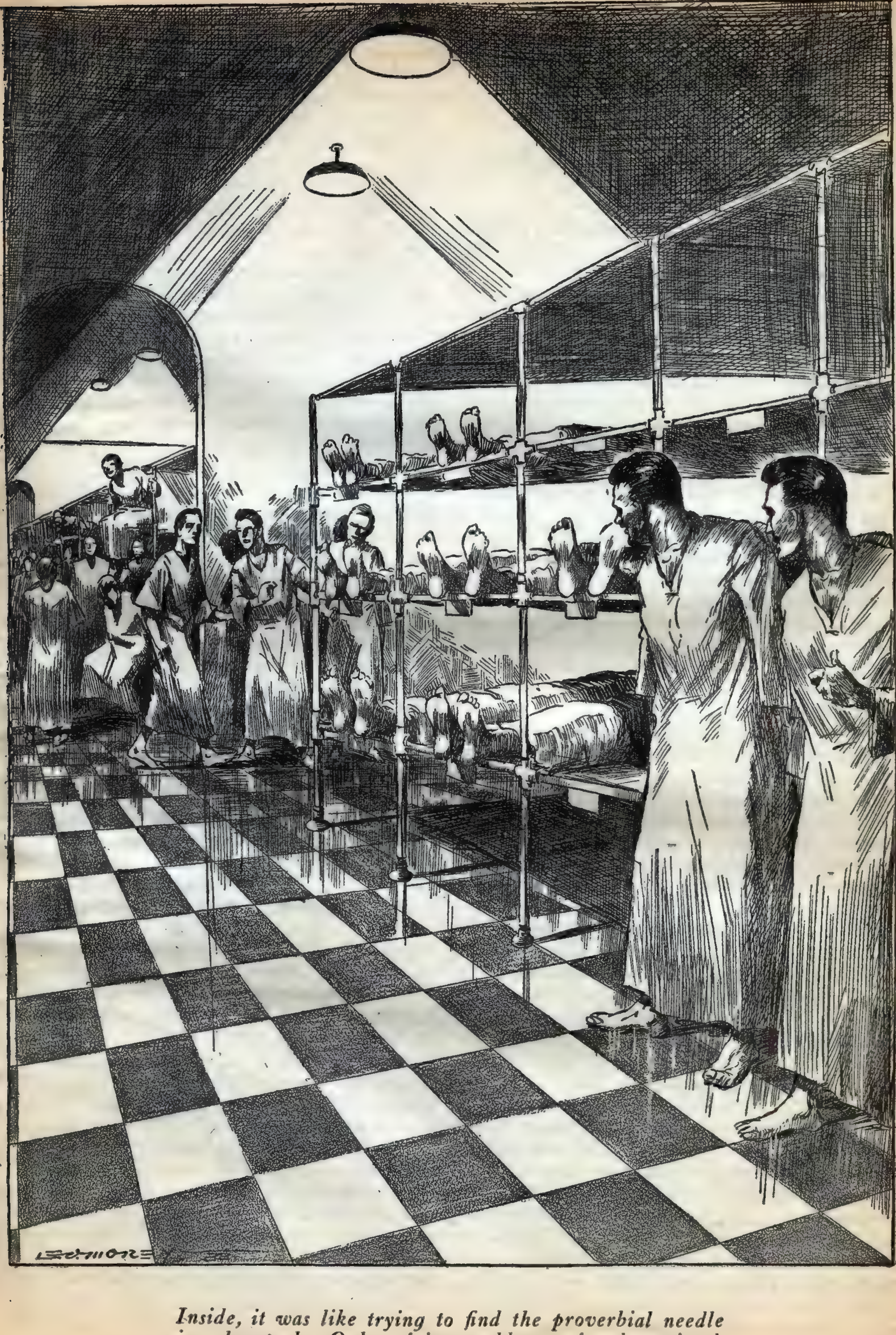
Listlessly, he opened his eyes. A group of faces bent over him. They were men wearing tight-fitting skull caps. Their expressions were serious, as if they had been in deep consultation and, apparently, he had been the subject. He breathed a sigh of relief. This was a hospital . . . at least he was not buried alive as his distorted reason had led him to believe! The effects of the chemical had apparently worn off. He felt perfectly well and refreshed now. There seemed little necessity for all this medical attention on his account.

Professor Gordon Anderson smiled. "Greetings, gentlemen," he ventured.

The medical audience gave no heed to his salutation, their faces reflecting only the cold, serious expression that met his gaze upon awakening.

Their unfriendly attitude he took with the proverbial grain of salt, and turned his attention in other directions. His cot was enclosed, he noticed, by four panes of glass, extending to a height of about five feet, open at the top, over which the assemblage peered in upon him. There were no covers on the bed and he discovered himself clad only in a loose, woolen gown. The bed upon which he lay could scarcely be termed comfortable for it stubbornly refused to yield even slightly to his weight. It felt little better than mere covered board.

Anderson was obviously curious to learn just where he was, but to be anywhere—and alive—was sufficient for the moment. To attempt further conversation with the uncommunicative group that continued to silently eye him so strangely, was hardly the thing to do. Yet to lie there, now that he had fully awakened, bordered upon the ridiculous.



Inside, it was like trying to find the proverbial needle in a haystack. Only a faint semblance of order existed.

"Will one of you gentlemen get my clothes?" he asked finally. "I feel perfectly well now and will return to the college.

Silence and Astonishment

THEIR eyes widened perceptibly, as if in astonishment when he spoke. But their silent, maddening gaze persisted.

The Professor pulled himself into a sitting position. "Of all the stupid idiots!" he stormed. "What are you gazing at? Can't you speak—say something? Get me out of this cage!" and he beat an emphasis upon the glass enclosure. Suddenly he halted his ravings. His scientific mind had found something of greater interest for the moment. The "glass" yielded as if it were rubber! He pressed upon it. It bulged outward. He removed the pressure and it sprang back into place. This was indeed novel, he reflected. Peculiar that he had never before known of its existence . . .

While thus contemplating the new substance, he became aware of an activity among his "spectators." They edged away from the enclosure giving an opening through which he saw a man, distinguished from the others only by a gold star pinned to his uniform, approaching him. The subservient attitude of the others indicated his superior rank.

For a moment he looked at the man within the enclosure, then a broad smile lighted his face. "How are you, Professor Gordon Anderson?" he opened.

At least someone was human in the place, the scientist reflected. "Excellent, thank you," he returned cordially. "I was just requesting my clothes of your seemingly insensible assistants, but I was unable to make myself understood."

The newcomer laughed. "Those were my orders," he explained. "It has been a standing rule that when —or if—you returned to consciousness no one must speak with you under any circumstances. You will appreciate the reason later."

Anderson shrugged his shoulders uncomprehendingly. It was certainly a most odd command, but it made little difference to him now. He was interested only in getting out of the hospital and back to his classes. He could imagine the icy disciplining he would receive from the Dean for the foolhardly experiment he had made upon himself!

How About Getting Up?

"WELL, Doctor, how about getting out of here?" he pursued. They seemed so slow-moving! What would they ever do in an emergency?

The chief turned to one of the assistants and whispered a few words. He saluted in strict military fashion, turned, walked across the wide, empty room, and disappeared through the distant door. For the next few minutes, the entire group including the chief, occupied themselves with merely looking upon the nervous, impatient person of Gordon Anderson.

The assistant returned carrying a white robe and a glass containing a crystal-clear fluid which he was ordered to drink, with the assurance that "this concentrate will give you rapid nourishment."

The transparent sides were removed from the cot and Anderson stepped upon the floor. His legs felt weak beneath him, but he would never admit it, lest he be replaced in the enclosure. He slipped the robe over his shoulders and, with the assistance of the chief, walked across the room and into a wide, brilliantly-lighted hallway.

The pair soon came to a door upon which, Anderson noticed, was inscribed in letters that appeared peculiarly difficult to read: "Antony Marsden, Private." His companion opened the door and with a jocular "Here we are," bid the scientist to be seated.

The luxurious fittings of the office told eloquently that Marsden (he felt sure that this must be the man whose name was emblazoned on the outer door) was no underling in this mammoth institution—whatever it was.

The seemingly needless delay on the part of the Chief in securing his clothes vexed him and he again requested that he be permitted to return to his duties at the University.

"First, I want to speak with you—and be the first to personally congratulate you upon your ingenious discovery." The man beamed as he stood before Anderson and bowed low.

The Professor looked at him blankly. He felt sure, judging from the peculiar, conglomerated events of the past half hour, climaxed with this unexpected sweep of esteem, that he must be considered insane, and that this unusual procedure was what is popularly known as "humoring the patient."

The Chief noticed the expression of surprise and hastened to assure him that "the honor is entirely mine, Professor Anderson, to personally welcome you back."

The Mysterious Congratulations—Suspended Animation

ANDERSON'S mouth opened in an uncomprehending amazement, but the Chief continued speaking as he seated himself in a heavily-upholstered chair. His words came slowly and deliberately.

"Your discovery saved civilization. In the dark years of the nineteen thirties, history can now clearly discern that, were it not for the genius of one Professor Gordon Anderson, the world could never have continued under the strain of a rapidly changing economic situation.

However, your initial invention was so undeveloped that the medical profession to this day marvels how you could have lived after the terrific dose you administered to yourself; also due to the poor facilities to care for you during your state of suspended animation!"

Anderson leaped to his feet. "Suspended animation! Are you serious? . . ." he cried in amazement.

"Then it was a success? Tell me," he pleaded, "Tell me! How long have I been asleep?"

The Chief held up his hand in warning. "Calm yourself, please. I shall be happy to tell you everything, but you must not become over-excited. Remember you have not yet recovered your full strength."

The Professor sat nervously on the edge of the seat. The strain of anticipation and realization left him trembling. He drank a glass of water from a near by table.

"Professor Anderson" . . . Marsden paused. His voice took on a tone of professional warning. His words came slowly and somewhat hesitantly. "Professor Anderson, it becomes my rather awkward and unusual duty to apprise you of a fact that will no doubt be a shock to you. Yet, your scientific mind should receive this news without overdue emotional display.

"Your case is unique in the annals of scientific history for your period of hibernation has set a record that must stand for many, many years. When you so courageously used your own body to demonstrate your confidence in the possibilities of suspending animation, neither you nor any members of your audience realized how much time would elapse before you would again return to consciousness.

"I urge you, Professor, to control yourself in receiving the facts: This is the year A. D. 2103, the 145th year of the Technocracy. You have slept for 170 years!"

A Sleep of 170 Years

ANDERSON was strangely quiet. He was staring blankly at his informer. Although he, himself, became the living proof that his discovery of suspended animation held tremendous possibilities, the words of the Chief were a bit too much for him to accept on mere face value. A smile parted his lips. His mind still refused to relinquish the belief that he was in a hospital, with an added thought that some practical jokers of the faculty may be "carrying through" his fantastic idea with this hoax.

But reason refused consideration of this belief. The very building in which he found himself proved mutely but conclusively that this possibility was preposterous. The lavishness . . . the severe beauty . . . the rigid, business-like activity of the place—he had never seen nor heard anything of its like!

The realization of the truth became more strikingly apparent when the Chief picked up a newspaper from his desk, encircled the date-line with a red pencil and handed it to him: "New York City, Manhattan, June 14, 2103." (The island of Manhattan had long since been created a state.)

One hundred and seventy years! And he had thought it was only yesterday that the chemical had rendered him unconscious! Nervously he paced the floor pausing in front of a small wall mirror in which he scrutinized himself. There was no visible change except for the need of a shave. He stroked his beard reflectively as he gazed into the glass. His colleagues . . . friends . . . pupils . . . all dead more than a century ago! Alone, he had stepped across the void of time! He no longer doubted the facts Marsden had presented—every sense supported the truth of his words. A feeling of utter lonesomeness swept over him . . . a "home-sickness" for his own times. . . .

Marsden noted his dejection and he attempted to console him, affectionately patting him on the back, saying, "Never mind, Professor, you are still a young man with the major portion of your life before you. How much more interesting you will find existence under the Technocracy than under the distorted Democracy of the Chaotic Age you left behind."

Anderson nodded his head in dispirited affirmation. He was thinking. It was all very well to hold the honor of being the first man to ever read the comments of history regarding himself, but to resume life now—after more than a century and a half of progress had passed him by—would be impossible! He, by comparison with a mere elementary chemistry student of this age, would be an ignoramus! He might have been a scientific genius in 1933, but surely 170 years had left him little hope to continue with his present knowledge.

The Chief interrupted his introspections. "Come, now, you shall be my guest until government Vocational Advisers arrive to aid you in again establishing a scientific contact. I will take you to your room where you may prepare for dinner. There is much that you will want to see and discuss . . . but let it all wait until later."

Ready for Dinner

A MUFFLED buzzer, accompanied by a small light flashing over an instrument on the wall of Anderson's room, shook him from the disconsolate thoughts that had occupied him for the past few hours. The image that appeared on the small square of opal-like glass was that of Marsden.

"Are you ready, Professor?" His voice emanated from behind the screen. "I'll be right in for you."

"Well," Anderson mused, "that's something new, anyway." He was ravenously hungry and eagerly awaited the dinner appointment.

He donned the peculiarly-fashioned clothes prepared for him and was completing his dress when the Chief arrived.

"All ready, I see," he greeted the Professor. "Come, we'll be on our way." They emerged from the apartment which, Anderson discovered, was located within the walls of the huge hospital-like building in which he had first found himself. After a walk through the wide, brilliantly-lighted corridor, he finally breathed the refreshingly cool night air of the year 2103!

A small vehicle of ultra-streamline design, yet maintaining a faint similarity to the automobiles Anderson had known, awaited them.

He proceeded to enter, but halted in hesitance when he found seated in the car a most striking young lady who in a most engaging manner bid him enter.

"Oh, you must pardon me, Professor," Marsden said apologetically, "I neglected to inform you that my daughter would also take dinner with us, that is, if you don't mind." Then turning to his daughter, he added, "Alicia, I want you to meet Professor Gordon Anderson, who awakened to-day from the Hibernator. As you know, Professor Anderson is the originator of Suspended Animation."

The Originator of Suspended Animation

ALICIA acknowledged the introduction stiffly. Anderson, however, beamed enthusiastically over this unanticipated pleasure. He became completely engrossed with the captivating girl who accompanied them. She appeared so demure . . . her smile so enchanting . . . her dark brown eyes so fascinating.

At the community dining rooms, Anderson learned that in the twenty-second century no one prepares a full course meal at home. Indeed, the modern home had no facilities for such activity. The State maintained these mammoth restaurants where food was prepared in the most scientific manner and under the acme of sanitary conditions.

"Just as," Chief Marsden explained, "in the first part of the twentieth century the State maintained the highways and the schools, so to-day, the State maintains practically everything for the benefit of the citizen. In reading history, we often wonder how it was ever possible to exist under the old out-moded conditions.

Anderson smiled. "Man has a way of getting along under the most trying circumstances. Nature created a pretty tough animal in the human of the species." If Marsden was trying to guide conversation into historic channels, Anderson was equally certain he would resist such plans. A comparison of past and modern-day conditions would occupy hours—and there were far more interesting subjects to discuss in the company of the charming Alicia!

He stared at her for several seconds—almost imprudently—while her eyes idled across the huge hall. She was so quiet! Since the introduction in the motor conveyance, she apparently took no notice of him, permitting her father to usurp his entire attention. He must bring her into the conversation.

"If the tables were reversed," he ventured, "and you, Miss Marsden, were cast into the twentieth century, I am sure that you would have a most interesting time, despite the prejudices that history has created."

Alicia looked at him intently, then in a most serious tone, she replied, "Yes, I am sure of it. I am sure that the people of your time despite the strain of the economic system were considerably happier—and more content—than in this age." Anderson imagined he detected a tone of bitterness in her voice.

Her father interrupted her comment. "Alicia is almost neurotically biased," he hastened to explain, with a reproving glance in her direction. "She has moments of an almost atavistic morbidity."

"On the contrary," she defended hotly, "it is you and the few million others that profit by the Technocratic system now in effect, who are biased!" Then addressing Anderson, she continued, "I cannot blame you for the situation, but you should know that if your discovery had been delayed for only a few years, the world might have readjusted itself to the change wrought by the advent of increased machine production without the sedative that you injected!"

A Wonderful Atavistic Point of View in Verbal Explosion

PROFESSOR ANDERSON gazed in wide-eyed admiration of the girl. But apparently she had spoken "out of turn" for Marsden's clenched lips gave silent warning to his daughter to halt her tirade, but she disregarded him entirely as she continued:

"Has Father told you what the huge building is in which you awakened? Has he discussed the change in governmental "aid" brought about by your ingenious discovery?" She emphasized "ingenious" sarcastically. "Has he told you that 'modern science and the machine have eliminated human suffering?' If he hasn't, no doubt he will soon and you shall hear, first hand, from the world authority, Antony Marsden, a truly biased discourse on the subject!"

Alicia was standing with her last few words and with an abrupt "Good Night," she left the two in open-mouthed amazement.

Marsden was first to break the silence that ensued after his daughter's verbal explosion. "I don't know what will become of that girl! I fear that her words may some day land her in the toils of the law. It's indeed difficult to understand—my daughter to be so radical!"

Anderson was sorry she left. The evening was just beginning to become interesting. However, she did leave him with several thoughts. What were these problems that so embittered her?

Marsden proceeded to tell him. "I haven't had opportunity until now to present further facts regarding many things that have doubtless concerned you," he said.

"Firstly: The building in which you returned to consciousness is known as the Economic Hospital. There are twenty such buildings in strategic points of the United States. It is a structure honeycombed with crypts or Hibernation Chambers. But, before I discuss the hospital, you should know something of its requirements.

"When in 1933, your discovery became known to the scientific world, there was considerable agitation among a group of scientists known at Technocrats, who declared the economic system in vogue had become antiquated and suggested that by efficient use of machines, it would be possible to rehabilitate the economic structure, and permit man an excellent livelihood with approximately twenty hours work each week.

"Bankers and economists scoffed at the idea and they, being the powerful minority of the day, succeeded in having the thought temporarily abandoned. However, they reckoned without your invention!

A Technocrat World and Hibernation

"SCIENTIFIC development of your discovery came rapidly but the world continued to sink lower into the mire of depression until a drowning people clutching at their last straw swept a Technocrat into governmental office in the elections of 1956.

"Old, time-worn laws and traditions were immediately discarded in the drive for efficiency. Machine production had reached such a point that physical labor was required only in rare instances. Seventy-five million persons were unemployed. Demand under these chaotic conditions had dropped to a negligible point by comparison so that even machines were used but part-time. It became necessary to apply radical methods to readjust the confused conditions.

"Accordingly, after much argument, it was decided to effect the use of Suspended Animation to halt the financial drain of dispensing relief to the millions of unemployed, and the growing rumble of rebel discontent.

"Millions were immediately set to work in the construction of huge Economic Hospitals and in 1958 the buildings and the plans for action were completed.

"When the Hibernation plan became known, the smouldering brand of discontent almost erupted into flame. But rapid action on the part of military forces rounded up these malcontents and," Marsden chuckled, "on a charge of sedition, they were the first to fill the hibernation chambers, with their immediate dependents. Obviously, this latter consideration was only fair because during the suspension of life processes, as you know, the individual ages scarcely a year in fifty. Thus, when a man is removed from the chambers, and he again becomes an active individual, his family is also removed, and they resume life together at the same virtual age."

Anderson marveled at the system. "And is it practical?" he asked.

"Practical? It has saved the nation and the world from a reversion to barbarism. It has proved itself in the past 145 years. The major consideration, however, is the fact that modern science and machines have eliminated human suffering!"

Anderson almost laughed out aloud. Alicia accurately foretold that, sooner or later, these words would be heard.

"Hibernation has brought about an almost theoretical Utopia," Marsden continued in summation. "The suspension of animation involves no physical pain and, although the general public look upon it with abhorrence, they have absolutely no grounds for this fear."

Anderson mentally reviewed his own experience with the discovery and doubted if he would care to again be a subject of its reactions.

"You must remember, Professor," Marsden said, "that your original, crude system has been vastly improved upon."

The Method of Applying Hibernation in Detail

HE launched upon a technical description of the method employed.

"As you know, three distinct points of control are necessary to cause a suspension of bodily activity and yet maintain life. When I use the term 'suspension,' I use it advisedly, of course, for actually animation is not entirely halted, but rather slowed down to an almost imperceptible degree.

"In swinging the subject into this state, the body is gradually cooled to a temperature lower than is demanded for activity or even consciousness. Respiration then becomes exceedingly slow but is controlled by a mechanism known as a "Respirator," a development of the instrument used even in your times to artificially enforce breathing in patients suffering from paralysis of respiratory organs.

Then the blood-sugar is reduced. Primarily, it is obviously necessary that the glycogen content of the liver be abnormally high for, as you know, it is a starch which is carried by the blood-stream to be transferred into sugar for energy. The percentage of sugar in the blood of the normal animal varies only within very narrow limits. In the hibernating animal it is reduced to a level at which the normal animal could not survive. Further following your original line of reasoning, Professor, insulin is the major chemical used for this purpose because this drug alone is capable of reducing, artificially, the sugar-content of the blood, performing a natural function.

"The storing of glycogen is necessary because, when the animal recovers from hibernation, the liver must be ready to supply it rapidly to the blood to correct depletion there.

"Now, if a non-hibernating animal is subject to cold until the body-temperature falls, it will attempt to recover its normal blood-heat spontaneously by means of the shivering reflex. And further, if the uncooled animal is treated with insulin, its blood-sugar content falls to a level at which convulsions occur and, with continued reduction, ultimate death."

Anderson listened with only partial attention. He was thinking of the past—of his friends—of his school—of his career—and of his life here in the future—and Alicia. . . . Marsden's voice droned along as if he were proceeding with a lecture—all elementary—why he knew all this before Marsden was born! He smiled as he considered this paradox.

"But," the Chief continued, "if the animal is artificially cooled under the control of insulin, the convulsions are inhibited. Thus you can see that if an animal is insulinized and cooled, both low temperature and low blood-sugar content become possible, though neither state may be maintained singly. Slow respiration is maintained by the Respirator.

Bringing the Subject Out of Hibernation

"BRINGING the subject out of the suspended state is comparatively simple. A slight warming of the animal, *plus* an injection of glucose, will induce shivering and restore the subject to a normal state."

Marsden had completed his discourse and the silence that ensued for the next few moments brought Anderson from his reveries.

"Most interesting, Chief," he acknowledged. Then, with a forced nonchalance, he inquired, "By the way, where did Alicia go when she left?"

"Oh, numerous places: the club, theatre, or possibly home—almost anywhere." How she occupied the evening apparently gave him little concern. Anderson couldn't comprehend this impeturbable attitude toward his daughter.

Marsden laughed. "Oh, she can well take care of herself. You must remember that family life has changed with the increased complexity of civilization. A parent's affection toward the offspring is withdrawn when the child can properly care for itself.

"The government aids in this procedure by the establishment of nurseries, schools and vocational guidance. The parents becomes a nonentity after the child has passed its fifth year. The child is imbued with the spirit of personal responsibility early in life. Let's not worry our heads about Alicia! I can assure you that she is better able to take care of herself than you are, in this age."

A waiter brought over a late edition of the daily newspaper.

"There should be something about you in here," Marsden commented as he turned the pages.

Did he say "something?" Why, his return to consciousness should be heralded in headlines, the Professor mused. In his day, at least, if a man had arrived suddenly from out of the past it would be front-page news for a month!

A Very Short Notice of the Dehibernation of Gordon Anderson

"AH, here it is," Marsden said as he folded back the pages and handed the paper to Anderson. Under the general heading of "World Events," he read:

"Gordon Anderson, Professor of Physics and originator of Suspended Animation awakened at Economics Hospital Number 1 today. Anderson hibernized himself during a demonstration of the discovery at the then-known Wilhemina College in 1933. He is the guest of Chief Hibernation Inspector, Antony Marsden."

Anderson returned the newspaper commenting, "Well, I must say, they certainly became excited over my arrival."

"Oh, I don't know," Marsden returned with a shrug. "You must bear in mind that waking from a period suspension nowadays is a very different thing from any such event in your day. News, after all, is the unusual. It's not unusual for a well-known personage to awaken. It's expected that he will when the time arrives. If he doesn't—that would be news!"

The hour was growing late and the Chief suggested that they return to the apartment. Anderson, weary of the discussion readily assented. He was eager to go back to the apartment half hoping that he might find Alicia there.

But his hopes were in vain for she had not yet arrived when they returned home. Marsden suggested that he retire since the following day might be a strenuous one for him. He must see the changes wrought in New York City by the passing of 170 years!

Inasmuch as Marsden would be occupied in conference during the major part of the day, the Chief suggested that Alicia escort him alone on the contemplated sight-seeing trip.

The Redeeming Feature of the Year 2103

ALICIA appeared to be the only redeeming feature of the year 2103. When Anderson greeted her the following morning, his heart skipped a beat: her dreamy beauty seemed enhanced by the indifferent attitude she maintained toward him. This lack of enthusiasm, he tried to believe, was not directed toward him personally, but was rather her general attitude toward the times.

"I have been ordered to escort you on a trip through the city," she stated simply. "Shall we go now?"

The Professor announced himself quite ready and together they entered the small motor car that awaited them in the street.

Traffic congestion demanded that she drive slowly. The silence that prevailed for the several opening minutes of the trip became embarrassing. Finally, Anderson opened with a hackneyed phrase of the early thirties: "I trust I am not intruding upon other plans you may have had for to-day, Miss Marsden."

"Please do not concern yourself with that," she answered sweetly enough. "My plans are secondary to my Father's commands." Her words were not particularly convincing to the effect that there was nothing else she might have preferred to do.

"I am sorry," he continued, "for anything that I might have said last night that caused you to become upset."

Her eyes were fixed on the road. She smiled cynically and spoke as if giving voice to introspections:

"I ought to really show you New York as it should be seen, Professor. Then you will no longer wonder why any person with a semblance of fairness should not become upset when the question of Technocracy arises."

Anderson's curiosity was piqued by this remark. "Why so?" he inquired.

"Techncracy," she continued, "is theoretically perfect, permitting the pursuit of life and happiness in a most ideal manner. But, if you will forgive my bluntness, I should add that it might have been a practical success—or developed into a practical success—if your discovery had not arrived at such an inopportune time."

She spoke in riddles. He couldn't comprehend her meaning. "Please explain," he pleaded. "After all, I know nothing about the difficulties that you insinuate have resulted from my discovery."

The Trouble Due to the Discovery of Hibernation

"IT'S just as well," she said with a finality. "You will have less to cause you futile worry. More than likely the government Vocational Advisers will place you in laboratory research work and there you may continue with some experiments to derange the lives of future generations!"

Alicia's bitterness disturbed him. "According to your Father," Anderson defended, "the system of suspending animation has permitted a veritable Utopia."

"I warned you of Father's biased lectures." Then she added, "Father is one of about five million persons who obviously favor the present autocratic domination of the Machine. Their selfish, luxurious existence depends upon keeping the remaining hundred and eighty-five millions of people in subjection. Governmental officials, research engineers, economic hospital employees, a select number of manufacturers and merchants, and the Militia, of more than a million, are the only individuals who are not subject to call for Hibernation! The miserable others never know when their time shall come.

"It is a vicious circle that keeps growing smaller and smaller with each turn of the year. The hospitals throughout the country now have more than twenty million persons in suspended animation! No one knows when, or if any of them will emerge, for each year finds a new million or two 'on the shelf'. That means there are that many unemployed—unemployed because machines have eliminated the need for their services. And the machines continue to drone out a quota of production to meet an ever-decreasing demand because of the millions who no longer demand.

"You wonder why the people can remain content under these conditions? They are not content! The machine that has replaced them has also tied their hands. Every man has a brother or sister in hibernation. An attack upon the Hospitals might result in some catastrophic action on the part of heartless officials who have but to cut the current for a few minutes and every one would die—the hibernators that maintain the rhythmic tempo of respiration, would cease their activity. And no one would ever find out who did it! Ultimate blame would be placed upon the 'unruly mob that burst upon the Hospital,' as the newspapers would say. Oh yes, it happened once! So now you know!"

Now You Know!

THE Professor was silent. He could not but admire the fairness of this girl who, although ordinarily immune to call for Suspension, felt the plight of the masses so keenly. He had been told, in no uncertain terms, the condition into which his brain-child had plunged the world. Never did he dream that his discovery would find such inhuman use. It was astounding!

"In short," Alicia concluded, "instead of junking machines, the world has resorted to junking people!"

They had reached their destination—wherever it was. Alicia stepped out of the car and he followed. Together they entered the ultra-luxurious lobby of a building. Alicia led the way toward an elevator over which a sign read: "Tower Car." They entered alone, the doors closed automatically. For more than a minute they stood there, unaware of any motion of the vehicle. Then the doors opened and the pair stepped out.

"You are a thousand feet above the streets," Alicia announced. "From this point you can see New York."

Anderson looked in amazement. The sky was crowded with regularly moving planes: silent and swift. But below, the streets seemed oddly devoid of the scurrying crowds that jammed the lanes in his time. Spires pierced the clouds above him. Arched bridges, high over the streets, connected each building with the next; a veritable honeycomb of metal and brick. "Little Old New York," he mused. . . .

ALICIA and Gordon saw much of each other during the weeks that followed. As Alicia had prophesied, the Advisers found Professor Gordon Anderson "peculiarly fitted to pursue a work along lines of chemical research." He had studied diligently the texts he secured to acquaint himself with the advances made by science during the interim of his sleep. But to his surprise, as he explained to Alicia on an evening in which they were alone together, "there has been comparatively little advance since my day."

"That's to be anticipated," the girl explained. "Although it may seem to be a strange paradox, with the advent of Technocracy came stagnation. New minds have poor opportunity to develop in the Respirators; and the old minds have become preoccupied in politics."

Anderson sighed. "I've learned much in the short time that I have been here. And the more I see, the more I realize that all you have told me is the truth." He hesitated a moment. "Fate has been cruel to force upon me the recognition that I am basically responsible for this economic catastrophe. Tell me, Alicia—is there nothing I can do to make amends to humanity?"

The girl smiled. Her eyes reflected the whole-hearted sympathy she voiced. "How can you alone hope to break down the system maintained over a century and held so rigid by the powers that be?" Her voice softened. "It's not your fault, Gordon. How could you foresee what would happen?"

The man shook his head sadly. "It's an awful situation. Yet, there must be something that could be done to help toward the re-establishment of the old democracy. Don't the people cast their vote against the Technocrats?" he questioned.

"Oh, yes, there are still elections. And other political parties wage courageous battles during campaigns, but of what consequence is it? Even at the polls, by the intimidating spectre of hibernation that is always before the voter, the average citizen casts his ballot for the Technocratic candidate. These activities have created an obvious apathy toward the ballot box. The national vote is surprisingly small."

The situation looked hopeless. Anderson gazed in blank despair at the floor. "It's no wonder you hate me, Alicia," he said slowly, "as basically responsible for this diabolical system. I too would hate anyone who liberated such a curse upon humanity—I hate myself for it!"

She took his hand caressingly. "Please, Gordon, it is not right that you blame yourself. If you had not made the discovery, someone else surely would have." She eyed his downcast face critically. Yes, his repentance was genuine . . . his sorrow was real.

Her voice dropped to almost a whisper. "Gordon . . . look up at me . . . you can help . . . there may be a way. . . ."

Her voice was so soothing . . . so different from any he had heard in this rasping, machine-driven age. He looked up into her eyes. They were like pools . . . so blue . . . so clear . . . Her face had lost the strained bitterness—the expression of indifference—the cold aloofness. She seemed to radiate a veritable saintliness. . . .

"I would do anything—anything that might correct the evil I have loosed. Tell me," he implored, "is there a way . . .?"

Alicia edged closer to him. "I know you're sincere, and I trust you. There is a way!"

The girl arose. "It is yet early. Come with me."

Together the pair left the building and entered her motor-car on the street. Minutes elapsed in silence as she drove toward the city. Suddenly the car slowed its pace.

"I shouldn't do this," she said, suddenly. "It isn't fair to lead you into this danger blindly—without your knowing of the perils involved."

He looked at her in perplexity. Is the danger too great for you?"

Danger in Prospect

SHE smiled. "What is mere jeopardy when the cause is so great? But you should know," seriously, "something about the Cause of which you shall become a part.

"To be a Democrat—a member of a party with principles so antagonistic to the powerful Technocrats—is considered to be almost treason. It is far more serious than being considered a radical in the early twentieth century. It involves a penalty of indefinite hibernation—the supreme penalty since the abolition of capital punishment a century ago.

"Meetings are held secretly. Among the membership are men and women from every walk of life—many like yourself and me, immune to the economic call of the Hibernator—but who would gladly risk their life to halt the ravages of stagnation that has seized the world since the Technocratic regime has been in power. They are scientists, economists, teachers, military men, merchants, manufacturers and professional people. A handful, to be sure—but representative of the miserable millions who live a life of fear and dismay, fearing that to-morrow their existence may be interrupted by the ever-growing independence of the machine!

"Spies are all over. We cannot be too careful. But my presence in the group aids considerably in alleviating the suspicion that any congregation of people inspires. After all," she laughed, "it is highly improbable that the daughter of the Chief Hibernation Director would become involved in any plan to throw her own father out of employment!"

Ordinarily, Anderson also might have been surprised that a daughter might thus cross her own father, but things were different in the twenty-second century, he had learned. The family was no longer the closely-bound unit that existed in a less complex era. Parental affection, especially among the upper-classes, had ceased entirely. And even among other peoples it was rapidly disintegrating.

They were driving through a crowded thoroughfare of New York. A huge building in the distance Alicia pointed out as the Institute of Culture where "the meeting will take place."

"But I thought you said the meeting was held in secrecy?" he questioned. "It seems to me that it would be far safer to meet in a less conspicuous place."

"Why?" she responded in surprise. "To make a distinct effort to hide one's activities is only evidence of a desire to maintain secrecy."

She parked the car in the garage beneath the building. While walking toward the elevator, she whispered, "No one mentions names in the meeting. The fact that I accompany you is sufficient to gain admittance. I will introduce you only as a Chemical Research engineer."

Alicia and Gordon entered a small hall on the fiftieth floor of the building. In an anti-chamber, several men and women greeted Alicia pleasantly, and nodded stiff recognition of Anderson upon Alicia's introduction. In the hall a man was speaking.

". . . and what the brain of Professor Gordon Anderson created in the twentieth century, can surely be nullified in the twenty-second!" the lecturer exclaimed forcibly.

Anderson looked at Alicia in surprise. They were talking about him! The girl placed a finger to her mouth in warning against making himself known. Anderson listened attentively to the speaker.

"Where are our modern scientists? Are they unable to cope with a discovery made almost two hundred years ago? Is there no antidote? . . . Civilization cannot continue to be guided by a Technocratic government. Science and machines can aid the life of a nation—not lead it!"

"You wanted to know what you could do?" Alicia asked Gordon after the meeting. "You have had your answer. The twentieth century science that gave birth to the Technocracy can also strike the death-blow. The world unconsciously looks to you, Gordon, for redemption. Civilization cannot survive another hundred years under the present strain!"

Anderson made no reply. He was thinking. What could *he* do? He had noted the apathetic decline of science. The wild, fantastic prophesies made by the imaginative of his day had somehow failed to materialize. Science had become involved in politics. It was no longer the pure, unselfish study he had known. Technocracy had figuratively killed the goose that laid the golden egg.

Professor Anderson in the Great Laboratory

ANDERSON worked feverishly in the huge laboratory of the Economic Hospital. Only one thought guided his activities: to find some way to undo the evil he had wrought—to fight science with science—to halt, in some way, the sacrifice of human existence to the Machine.

Queries from other research workers in the laboratory, curious regarding his activities, brought only cryptic replies. No one knew of the driving force that kept him occupied day and night—except Alicia. Often, when he was alone at night in the laboratory, she would sit near him for hours silently watching his every move . . . exult with him in his successes . . . condole with him in his discouragements.

Irresistibly, they were drawn together. Her early indifference toward him had changed to tolerance, then acquaintance, then friendship. And now, with a common ideal, came understanding. . . .

It was several months later that a meeting of Democrats was being held in the Culture Institute. Alicia attended alone, Gordon refusing to permit himself time away from his work. A speaker dwelled upon the possibilities of open revolt—advisability of sacrificing the millions of lives suspended in the hibernators for the benefit of posterity; to blow up the Economic Hospitals and refuse to rebuild.

The Great Meeting of Anti-Technocrats and Its Results

SUDDENLY the speaker grew pale. His words trailed off into nothingness . . . Panic-stricken, he gazed in abject terror at the sight that met his eyes. The audience instinctively turned around. Fifty military police, with guns drawn, blocked all exits! An attempt to escape would be futile. A few, preferring death to the inescapable penalty of indefinite hibernation, rushed through the guard for the door. Small machine guns spat a muffled tattoo bringing the preferable fate to many.

Alicia marveled at her own composure under the circumstances. She knew the little sympathy that she could anticipate from her father, and realized, with the others in the room, the punishment meted out to active radicals. Yet, an inexplicable calmness possessed her. She was thinking of Gordon . . . he would help her . . . help all of these poor creatures who saw nothing but a blank void for their future. . . .

The newspapers blared forth with extra editions to tell of the "capture of a group of Democrats in the act of laying plans for the wholesale destruction of the Economic Hospitals. Among those being held by authorities awaiting trial tomorrow is Alicia Marsden, daughter of Chief Hibernation Director Antony Marsden. She admitted being a member of the radical party. Chief Marsden refused to comment on the arrest."

Gordon Anderson read the news that was excitedly called to his attention by another research worker. He clenched the newspaper in his fists in bitterness, as if throttling the system that could conjure up such atrocities. Alicia had told him of the peril that existed in membership in a Democratic organization. The state would exact a cruel revenge. Marsden could surely intervene to prevent this inhuman atrocity . . . it was his daughter . . . he could do something . . . he *must* do something. . . .

Marsden looked up from the mass of papers that covered his desk with a curt nod of recognition. "Have a seat," and he waved airily toward a heavily upholstered chair in a corner of the room.

A Strange Meeting

THE scientist winced at this needless delay. What he had to say was far more important than any of those reports he perused so carefully. Time was valuable.

Finally, Marsden was ready. "Well, how are you this evening, Anderson?" he greeted cordially.

Anderson lost no time in formalities. Placing the newspaper on the desk he urged, "Read this, Chief Marsden."

Marsden gave the type a cursory glance. "I read it earlier in the evening," he said. "Why are you so disturbed? Surely the threatened destruction of the Economic Hospitals has not caused your nervousness?" the Chief laughed. "That action was only *planned,* and mere plans are nothing to cause you concern."

"No, no. You don't understand. It's . . . it's your daughter . . . Alicia . . . arrested . . ." he stammered nervously. "You must do something . . . you must help her. . . ."

The amicable smile that wreathed Marsden's features changed with alarming suddenness. His attitude became cold and belligerent.

"Your apparent concern in the plight, in which Alicia finds herself, seems wholly beyond the bounds of propriety, Professor Anderson. I can see where it is no affair of yours whatsoever!"

Anderson was visibly taken aback. "But she is your daughter . . . she needs your help . . . you must aid her," he pleaded.

Marsden's lips parted sardonically. "Yes, Alicia is my daughter. I'll help—I'll help to put her where she belongs—where she will never bring disgrace upon me again! Good Night, Professor."

Anderson could not believe the words he heard. Such coldness . . . such utter cruelty. Marsden spoke as if the insensibility of a machine were dictating its policy.

The Professor persisted in his supplications, but might just as well have addressed a robot. He turned, dejectedly, to leave the room. There was much he would have liked to say to the man, but he could not afford to place himself in any precarious position that might block his any effort to halt the ravages of the Hibernator.

"My Country Comes First"

MARSDEN'S tone softened. "You must remember Gordon, that times have changed. I am forced to subjugate my own feelings in the matter. As a representative of the State, my country comes first." Then he added, with a renewed bitterness, "to have my own daughter implicated in a plot against her government is sufficient dishonor. To raise a finger in her behalf would merely jeopardize further my standing in official circles."

Anderson was crushed. Only the slimmest thread of hope remained—the laboratory. And the plan he had been working on could not possibly be perfected in time to thwart the doom that threatened to take Alicia from him! One hundred and seventy years under machine dictation had wrought such ignoble changes, he reflected. It was the laboratory that created this sinister system; only the laboratory could demolish it!

The trial that took place the following day was a mere formality, since the "Infinite Hibernation" was pronounced upon each person found in the meeting. Without exception, each heard the sentence stoically. An air of martyrdom pervaded the courtroom.

Scarcely a half-dozen spectators were in the chambers. Anderson watched the legal proceedings listlessly. His eyes were upon Alicia. Without her he was alone . . . friendless in a world of machines! She smiled to him encouragingly. She alone faced the black future with hope. She had faith . . . in him . . . He would not fail her!

Together they sat alone in a room reserved for last visitations. Alicia warningly pointed toward a tiny button in the wall when Anderson entered. He immediately recognized it as a dictaphonic device.

"You will find friends," she said cryptically, as she wrote an address on a piece of paper and handed it to him. He put it in his pocket absently.

"Alicia," he burst out, "Alicia . . . you cannot leave me now . . . I have no one in the whole world but you . . . I love you, Alicia . . . I love you!"

Her eyes related more than words could ever tell. "And I love you, Gordon," she whispered.

Their meeting was interrupted by the appearance of a uniformed matron. Her austere presence indicated that their allotted time together had come to a close. Alicia arose. Impassionately she looked into his eyes. "Farewell, Gordon, my own. It must never be 'Goodbye' . . ." A tear rolled down her cheek.

Choked with emotion, he could utter no reply. He clutched her hand and covered it with kisses. Gently she drew it from his grasp, and accompanied the matron from the room.

In a daze Anderson wandered from the building. The bleak November day harmonized with his disconsolate spirit. He walked aimlessly away from the cold window-less gray stone structure. How cruel of Fate, he thought, to preserve him for almost two centuries only to break his heart! . . . to witness the machinization of people . . . to see the suffering of a machine dictatorship . . . to find love and sympathy, and tenderness almost forgotten entities . . . Technocracy! So this was the exaltation of Science! He laughed bitterly.

Work!

WORK alone assuaged his sorrow. Day and night found him bending laboriously over the laboratory bench; sleeping only when sheer exhaustion commanded; eating only when hunger required it. Alicia lay in death-like sleep somewhere in that building. Her parting words rang in his ears: "It must never be Goodbye!"

Theoretically, his efforts had been rewarded. He must only await an opportunity to determine the practical result of his findings, when he would be alone in the laboratory.

It was several nights later that chance permitted him the desired secrecy. Experimental respirators in which guinea pigs lay under the spell of Suspended Animation were located at one end of the room. Selecting one at random, he placed a block of solidified compound behind the whirring blades of a small electric fan.

It cannot fail," he muttered, as he watched in nervous anticipation the effect of the chemically-laden breeze on the rodents. He sniffed the air for some odor of the invisible fumes from the chemical block, but he could detect none.

Minutes dragged like hours. Suddenly he perceived a movement ever so slight, but nevertheless, a distinct convulsive reflex from the tiny animal. He watched, entranced. Fervently he prayed that Fate might grant him the chance to right the misdeed he had perpetrated 170 years before!

As if in answer to his entreaties, the animal was seized with a violent shuddering which continued but a few seconds, and was followed by an indication of the successful culmination of the experiment: normal, rhythmic breathing. The slow pulsations of the respirator failed to thwart the return of normal heart action and soon the tiny animal was struggling to free itself from the fetters of the machine.

But the fumes were far more powerful than even

Anderson had believed. So absorbed was he in watching the effect on the single animal upon which the experiment was concentrated, that he gave little thought to the five other suspended charges in separate experimental respirators. His attention was arrested by an activity and occasional squeal from the others that also fought to free their bodies from the restraining bonds of the machine.

Anderson's joy knew no bounds! He had found it! And the antidote seemed so simple, too! He hurriedly picked up the chemical block, carefully wrapped it, and placed it in his pocket. He must act fast. Laboratory workers would return in the morning and find the animals restored to activity. Suspicion would obviously fall upon him. He had neither the time nor inclination to spend the several hours required to re-suspend animation of the charges. Hurriedly he prepared a hypodermic of a potent anesthetic and administered it to each of the rodents. It would be fully a day before consciousness returned to the tiny animals and by that time he could reach the necessary aid to fulfill his idealistic mission.

The address Alicia had given him he knew as well as his own. He had visited there only several days after the girl had been suspended. He had introduced himself to a Dr. Dellovan . . . mentioned that Alicia Marsden had assured him that there he would find friends. Anderson was greeted cordially but conversation was strained. The subject of Democracy was a dangerous one to discuss impulsively and Dr. Dellovan indicated clearly that he had no desire to converse along these lines—with one he didn't know.

A Visit—Pressing the Cause

NEVERTHELESS, Anderson pressed his cause. He spoke freely of his plans to halt the atrocities of the Technocracy—through the medium of the laboratory that had given it birth. Dr. Dellovan listened attentively and, although he carefully guarded against verbally committing himself, there was a tone of encouragement in his remarks. Anderson visited the new friends several times, until he was certain that an understanding existed between them.

Despite his gruelling hours of toil during the past months, Anderson felt a renewed energy as he prepared to leave the laboratory. He was consciously aware of this peculiar surge of vitality. He wondered for a moment as to the reason—it was certainly something more than mere joy over the culmination of his hopes.

He thought about it while he drove toward the residence of Dr. Dellovan. The exhuberance was wearing off in the cold night air. A feeling of weakness and an almost overwhelming desire to sleep now possessed him. There was not a second to lose—he dared not permit even the few minutes oblivion for which his wearied body cried out.

What was this strange reaction, he pondered? It required every force of the will to keep his eyelids from closing. He opened the window of the vehicle to permit a resuscitating sweep of cold air to pour in upon his face—he was tired—he must sleep . . . sleep. . . .

He could scarcely drag himself from the car when he had reached his destination. Dr. Dellovan, apparently disturbed from sleep by Anderson at this late hour, came to the door in dressing robe.

Anderson literally fell in the door way. "Doctor . . . coffee . . . don't let me sleep . . . I'm so tired . . . quick . . . strong coffee. . . ."

Anderson's strange behavior and the late hour of his visitation alarmed the Doctor. He hurriedly prepared a cup of the desired beverage.

Anderson sipped it. "Sugar . . . please," he begged. The doctor poured two teaspoonfuls into the drink. Again Anderson tasted. "Sugar, please Doctor . . . allow me" . . . and he proceeded to pour a terrific quantity into the coffee while Dellovan watched in wide-eyed amazement. He literally poured the sickeningly sweet liquid into his mouth. It brought an almost miraculous result. The sleepiness vanished entirely and only a passing weariness remained. Instinctively he again reached for the sugar and swallowed several teaspoonfuls of the crystalline substance.

The Precarious Balance of the Hibernating Body Upset

"I HAVE it!" Anderson exclaimed suddenly. Without preliminary explanation the scientist propounded to the astonished doctor that "the same compound which called forth the latent glucose in the system of the animals, created the same condition in my own body! I had used up the sugar-content of my blood to an almost dangerous degree, Doctor! It's peculiar that I hadn't thought of this before! It was sugar that I needed—not coffee.

"But I must waste no more time, Dr. Dellovan." Anderson withdrew from his pocket the tightly wrapped solidified chemical. He lowered his voice to almost a whisper. "This tiny block holds the key to the end of the whole rotten system!"

Dellovan felt that he surely housed a maniac. Yet, he knew the man to be a brilliant scientist so he urged that he make himself more clear. "End of what system?" he asked.

Anderson smiled as the tenseness of his emotions relaxed. "Pardon me, Doctor, for my enthusiasm. I am really quite sane—" and he started to explain his achievement in a more coherent fashion.

Anderson proceeded with a detailed account of his experiment: to determine a method of exciting the nervous system so that the dormant supply of sugar is released into the blood stream, thus upsetting the precarious balance of the hibernating body.

Dr. Dellovan's face beamed. "Professor, you are a hero. The world will never forget—if what you say is true! Come with me."

Dr. Dellovan led the way to his laboratory situated in the recesses of a sub-cellar. He switched on the lights and Anderson was transfixed by the sight of one of the finest equipped experimental stations he had ever seen.

"This is the laboratory maintained by Democrats," he explained. "Here self-sacrificing scientists have labored in vain to find the solution that you claim to have discovered. But we shall see."

Without further word, he wheeled forth a Respirator, wherein lay an animal in Suspended Animation "Proceed with your demonstration," the doctor commanded.

Anderson repeated the procedure. The chemical cake was placed behind the revolving blades of a fan. Both left the room to prevent a recurrence of Anderson's experience with the fumes.

Several minutes later both re-entered the chambers. The animal had fully regained consciousness and was struggling to escape from the machine.

The astonished doctor could find no words to voice his amazement. He grasped Anderson's arm in an almost vice-like grip. "It is unbelievable!" he exclaimed. "You have performed a miracle, Professor. But come, we must lose no time."

The pair made their way to the upper floor. Dellovan rushed for the visio-telephone on his desk. "Come to my home—now! Do not waste a minute," he ordered, and without awaiting reply abruptly broke the connection.

Dellovan was visibly excited. He paced the floor as he thought, oblivious of Anderson's presence. Suddenly he wheeled and faced the scientist.

A Great Event in Prospect—A "Coincidence"

"THE Democrats have long been organized for this great event! The preparations are complete!" He spoke with utter disregard of the possibility of failure. "You must not be seen for several days—until sufficient of the chemical substance has been manufactured to execute the plan."

Dellovan reverted to soliloquy. "There are twenty Economic Hospitals in the United States . . . four intake air chambers . . . four air exhalators . . ."

A buzzer indicated that the expected visitor had arrived. The doctor opened the door. "I came as quickly as possible," the newcomer declared. "I trust it is nothing serious."

"Serious?" the doctor cried! "The most serious thing that has ever happened . . . but wait: meet Professor Anderson, Dr. Cosgraves."

The two exchanged greeting, Cosgraves eyed him critically. "It's a coincidence, I suppose, that you should bear the same name as the man who discovered Suspended Animation?"

Anderson smiled in reply. "Yes . . . a coincidence."

Dr. Dellovan lost no time in launching upon the reason for the hurry call. "It is now entirely in your hands, Dr. Cosgraves. As chairman of the Executive Committee it is up to you to convert the plan into action."

Cosgraves turned to Anderson who had remained silent during Dellovan's explanation. "Millions in the present will hail you," he said with deep emotion, "and millions in the future will remember you. Professor Anderson, you have liberated the world!"

Chief Marsden had been informed of Anderson's sudden disappearance, but it caused him little anxiety. It was the unusual report from the laboratory, news which came to him two days later, that gave him food for thought. Six experimental animals had, from some unknown cause, been roused from suspension. There was no evidence upon which to connect Anderson's absence with the restoration of the animals, yet none of the scientists employed in the laboratory could advance a reason for the unusual occurrence.

Suspicion was cast in his direction by the report from co-workers that he had engaged himself in a task which he guarded with utmost secrecy: that he was mysterious in his work and often was alone in the laboratory. The actual loss of Anderson gave Marsden little concern. It was the possibility that Anderson *might* in some way be connected with the reawakening of the animals. It was clearly a matter for police authorities.

The Mad Search for Professor Anderson

BUT Anderson was not to be found. His hideaway was almost as secure as if it were on the Moon! In the sub-cellar of Dr. Dellovan's home the scientist patiently awaited the word of achievement. Dellovan visited him daily during the week of incarceration, informing him of the progress made and of the fruitless mad hunt for him by the Technocratic authorities.

"There is a tenseness in the very air," he told Anderson. "Even the police and militia, whom the government have looked upon as being always strongly protechnocratic, because of their immunity to call for hibernation, are lagging in their search. They don't want to find you, Anderson. I almost believe that you would be safe on the streets, as far as the police are concerned. At heart they hate the government they must support. After all, they have everything to gain and nothing to lose by a change in party government and the elimination forever of the Economic Hospitals. They, like the average citizen, are held in subservience by the threat of the Machine, for if they ever lose their job, either by pretense or because of an actuality, immunity is revoked.

"Everything is in readiness," Dellovan continued. "To-morrow forty men—two in each of the Economic Hospitals—will place large blocks of the chemical behind each of the four intake fans that ventilate the buildings. Two of the exhaust fans will be disconnected. These men, in each instance, are electricians employed in the building, so that their activities will cause a minimum of suspicion.

"It won't take long, Anderson. More than twenty million people will awaken . . . twenty million will be restored to life to take their places in a nation stagnated by the tyranny of Machines!"

"Twenty million people," the scientist mused. . . . "How can the country absorb the sudden introduction of so many hands?"

A Difference in Operation

"THE country needs them," Dellovan explained. "The country needs the consuming power—the demand of these twenty million people. The Technocracy didn't need them—it was a machine-monarchy. The Democracy does need them—and needs the machines to care for them. The Technocracy adjusts the life of the individual to the tempo of the Machine. The Democracy adjusts the Machine to the tempo of the individual!"

Hours dragged slowly by as Anderson waited for the morning. He slept fitfully. His racked mind conjured the most dire possibilities—a million people awakening within the confines of each of the buildings.

And Alicia—she too would return to consciousness. His Alicia! She alone, of the millions that opened their eyes, would understand . . . Gordon had kept faith with her!

He glanced at the clock on the wall. Only minutes more to elapse before the fumes would begin their humane work. Suppose, for some unknown reason, it failed? The thought of such misgivings was too terrible to entertain. The guinea-pigs had responded. Why should the human system react differently? No . . . it could not—it must not fail!

He had exacted a promise from Dr. Dellovan that he, personally, would watch and care for Alicia. He would bring her to him immediately upon her awakening. How slowly the clock dragged! . . . The first several days in this restricted domain passed pleasantly enough . . . but now . . . when scarcely minutes separated him from a knowledge of the result . . . the confinement became maddening! . . .

The tread of foot steps on the floor above, brought him to his feet in frenzied anticipation. It was Alicia! . . . it *must* be Alicia . . . The trap door opened. It was Dr. Dellovan.

"Anderson," he called excitedly, "Anderson! Come up, quickly."

The doctor had scarcely called his name. He leaped up the tiny stair-case. "Alicia—where is Alicia?" he cried, hurriedly scanning the room as if she might be in hiding.

"She's safe," Dellovan assured him, "but it will take time before she can emerge from the building!—Come with me and see a sight that the world will never forget!"

The Great Awakening

TOGETHER they jumped into the car and made their way through the throngs of people that jammed the thoroughfares.

"Never have I seen such crowds—such happy crowds," Dellovan said jovially. "Every tongue will sing your praises!"

It reminded Anderson of Armistice Day—back in 1918. As they came closer to the huge, gray stone Hospitals, the crowds became so great as to make further travel by motor impossible. They left the car on the street and made their way through the crushing mass of humanity, toward the building.

They were halted suddenly by the armed militia that strained to hold back the surging mob. Dr. Dellovan produced a card which admitted Anderson and himself through the guard.

But they were stopped by sheer amazement. A continuous single-file stream of individuals all clad in uniform gray gowns were emerging from the building and into the street. A benignant, warm sun made the plight of the scantily-dressed individuals less miserable. Dellovan turned to one of the guards and asked why they were not stopped.

The guard scowled. "Are you one of them Technocrats? Just you try and stop 'em—you'll get your head knocked off!"

Dellovan smiled. He would surely be the last to ever stop them!

Anderson paid no attention to Dellovan's activities. He was watching . . . scanning every haggard, bewildered face that emerged. . . .

Through all doors came the gown-clad exodus. At each door, were workers handing out sugar . . . energy. No one interrupted, no one interfered. Husbands and wives wept in happiness over their deliverance. Families were reunited. Brothers hailed brothers. Sisters greeted sisters. Like a tomb releasing its dead . . . the millions came forth from the Hibernators.

But it was Alicia that concerned him. He strained his eyes in a vain hope that he might find her among the hundreds of thousands that jammed the streets.

"Let's go inside," Dellovan suggested. "Possibly you may find her there."

Inside, it was like trying to find the proverbial needle in a haystack. Only a faint semblance of order existed. Anderson knew that the girl would obviously make her way to her apartment within the walls of the Hospital and he concluded that to wait there would be the most logical course of action.

He decided to find Marsden. There need be no fear of him now! He might be able to tell just where the Respirator crypt in which Alicia was placed was located. Dellovan suggested that he go alone for there was much he had to take care of among the outpouring thousands.

Anderson went directly to Marsden's office. The corridors were strangely silent. Activity was centered entirely within the hibernation chambers.

He knocked at the Chief's office. Eliciting no reply after repeated raps, he opened the door.

The Fate of Marsden

THE sight that met his gaze made him recoil in horror. Marsden lay slumped over his desk. A pistol in his hands and a pool of blood on the floor

(*Continued on page* 344)

The Intelligence Gigantic

By John Russell Fearn

AT last we have the operations of the Intelligence Gigantic in full swing. The position of the life of humanity under his autocratic and irresistible sway has to be borne, although it is a most unhappy one, but like most stories it has a happy ending for some of the characters, at least for those in whom the reader is most interested.

Illustrated by MOREY

What Has Gone Before:

THREE scientists have met, two men of advanced status and one a young laboratory assistant. Dr. Soone is introduced as having a rigid personality, giving a hint of trouble in the future. The other professor is a kindlier man. Between them, inspired by the work of the youngest of the trio, it is proposed to construct a synthetic man. He will be endowed with about five times the intelligence of the ordinary human being and the eager investigators unmindful of the monster, like the one which Frankenstein created in Mrs. Shelley's famous novel, failed to realize the risk they are running. This creature requires a very short time for his development, partly because of the eagerness of the investigators, and eventually there steps into being a synthetic man whom the story calls "The Intelligence Gigantic." His intellectuality and his occult powers are impressive, but are backed by no humanity, no thought of the happiness of mankind. He seems to be destined for life in perpetuity, to be immortal and to be moving to increase his powers more and more. He wants some human being to be associated with him in his cold-blooded, wonderful operations, and it is Dr. Soone who volunteers as his assistant, and who is accepted. And before the end of this portion of the story is reached, we see the outline of his work—the desire and the power to control the whole world of humanity and to operate the life of the world on principles of arid mechanism and absolute slavery. The dénouement will come in this issue.

PART II—CONCLUSION

CHAPTER V

Athlinstone

FOR nearly two weeks Dave and Nan toiled at their daily shift in the Factory for Metal Refinement without making any attempts to escape. They had been permitted to work together, as husband and wife, and this at least was fortunate in case any chance of making a fresh move should come along. Their shift lasted from seven in the morning until seven in the evening, allowing thirty minute intervals for three meals. After seven p. m. they were permitted to go to their own quarters—neat, not unpleasant little quarters in the special section of the colossal city assigned to the workers. . . . At first the work was crushing and arduous, but after three days their muscles became adapted to it. Both were young and phenomenally healthy, so ill effects took on rarity. Rather it hardened them. The overseer, Kelby, was a good man at his work, and not brutal. He possessed a keen sense of justice, and although permitting no lazing, countenanced, by the same token, no working of the unfit or fatigued. . . . On the whole, therefore, the workers were not badly treated.

Yet the thought of being controlled by something or somebody much cleverer than themselves slowly breeded that sense of vivid jealousy—a jealousy flavored with bitter hatred at the enigmatic fashion in which the unknown Emperor of the Earth had gained his end. There was more than a little hint of rebellion sweeping already amongst the less prescient of the workers. Dave encountered it frequently, and did all in his power to check the flame that smoldered so dangerously. The last thing he wanted was a rebellion; it would only precipitate matters, and in any case result in a complete victory for the mighty Intelligence. That being was unbeatable!

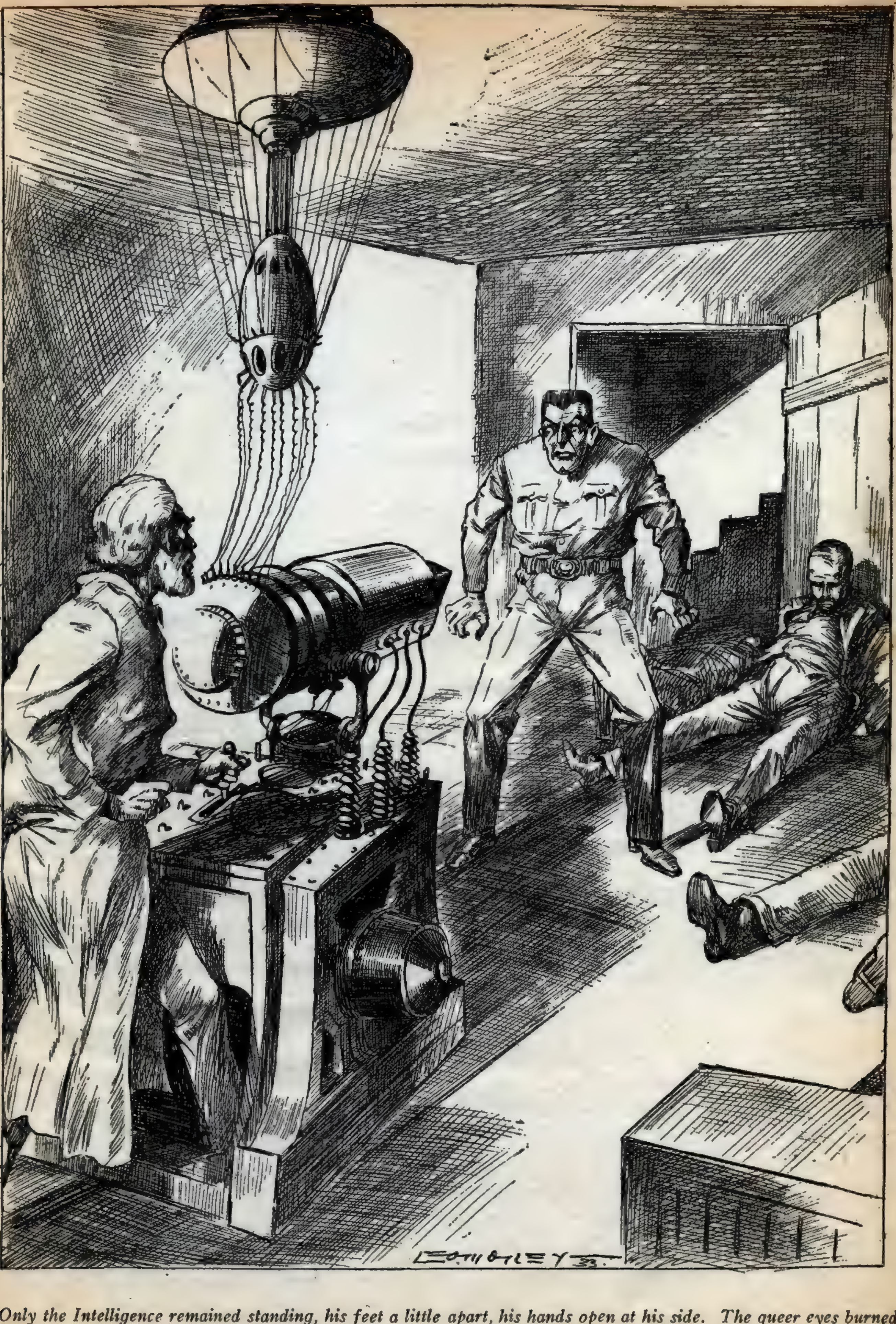
At the commencement of the third week Dave began to grow restless. There seemed to be no outlet for his ingenuity, no chance of exerting his powers in this city so closely guarded and watched. Plans he had made by the score and cast aside as useless; ideas he constantly revolved in his mind, only to bring them to maturity with an absolutely pointless conclusion.

"Undoubtedly my brains are made of sawdust, old girl," he said frankly, as he and Nan worked side by side, sorting out the ores which were slowly conveyed down the chute in front of them to a waiting truck underground—and thence to the refinery. . . .

The girl was silent for a moment, then she muttered in a low voice, "Do you know, Dave, I believe the escape we want is staring us in the face? Has been ever since we came here!"

Planning an Escape

"STARING us in the face! What do you mean?" Dave spoke to the ores in front of him, for the eyes of Kelby were upon him.


LEO MOREY 33.

Only the Intelligence remained standing, his feet a little apart, his hands open at his side. The queer eyes burned like fire once more and down came the eyebrows into a sharp V. He took a step forward, jerkily and clumsily, as though with colossal effort.

"The chute!"

"The what?"

"The chute. Slide down the chute into a truck below!"

"Good Lord, it's impossible. We might kill ourselves. . . ."

"Why should we? It's only a twelve-foot slide into the truck—then we can bury ourselves under the ores on the truck until the search is given up. After that we're free to move about and try and find a way out of this place we're in."

"I wonder . . ." Dave looked at the chute before him. Certainly the chute was wide enough to admit of a human body. "Nan, it's the simplicity of the thing that might do it," he murmured. "I'll give the word. When I do, dive into that chute like lightning!"

"Right! I'm ready!"

Nearly half an hour passed before Kelby finally moved aside and strolled towards the other end of the edifice. . . .

"Right!" Dave breathed tensely—and incontinently dropping her work, Nan jumped forward to the chute and dived headfirst into it, to immediately vanish from sight. Without hesitating a second, conscious of a slowly rising uproar about him and shouts of alarm and consternation, Dave dived in after her. Followed a giddy rush through total darkness, a fall through a yellow-lit nothingness, and a harsh impact with something hard. Dazedly he looked about him and found, as had been calculated, that he was lying in the truck directly under the chute—a truck three quarter full of ores.

"Nan!" he whispered hoarsely, and the girl's head lifted above the chippings of metal.

"Bury yourself—quick!" she whispered, and within a few moments the truck was apparently devoid of anything save ores. The two only permitted themselves the tiniest little channel for air, and lay there in that super-heated yellow-lit gloom, perspiring and fearful. . . .

Two underground workers, controllers of the trucks, hearing the slight commotion, presently came and investigated, but never once glanced under the ores in the truck. The startling possibility of two fugitives being beneath them never once occurred to them.

The Fugitives in Hiding in the Ore Truck

AFTER a time Kelby arrived on the scene, accompanied by two guards.

"Any sign of two workers from the factory 'round here, 29?" he demanded. "They jumped down the chute. Must be somewhere about."

"Not seen them, Kelby," 29 returned. "I heard a noise—but no sign of anybody. What were they like?"

"Young man, strongly built Saxon—and a young woman, his wife. Both fair, and both very athletic. If you find them, nail them. I'll have a look round!"

Tensely Dave and Nan listened to the footsteps of the Overseer and his men, as they poked about in the dark, gloomy recesses of the underground room. Kelby even stood on the truck and disturbed the surface pieces. Then he dismounted with a grunt of annoyance.

"Clean away!" he snapped. "This is damned serious! It was a neat piece of work that diving down the chute. They've got to be found, though. Come on, we'll send search-parties round about, and leave 29 to keep on the watch down here. Ahoy, there, 29!" he bawled. "Keep your eyes open for those two!"

"Rely on me, Kelby."

"I will."

The heavy footsteps of the overseer receded crunchingly into the distance. . . .

Even so, the two under the ores dared not move for fear of being seen. Showers of ores presently came down the chute as before, and piled on top of them. They managed somehow to keep on obtaining air, but so terrific was the natural heat of the underground tunnel, and their cramped, unventilated place, that they became in time almost stifled. It became obvious that before long a move of some kind would have to be made. . . .

Then footsteps came towards the truck. Following a grinding sound as another truck came along the little trolley-line and took the place of the loaded one. The engineer dispassionately removed the brakes from the loaded truck, and it slowly moved down the incline.

"Good heavens!" Dave choked in a hoarse undertone. "He's set the thing going! Nan, they tip these ores into the furnace for refining!"

The Truck Starts Down an Incline

FLINGING aside all caution he projected his head through the metal chippings, and a second later Nan's face rose also, oddly smudged with grey dust and perspiration. She looked about her.

On both sides the walls of the tunnel were speeding past with appalling quickness, wet and glistening. The truck creaked and trembled as it turned corners and twisted on its way through the dim-lit gloom toward the furnaces.

Dave looked to either side of him in desperation. There was no chance of jumping out: the walls were too close for one thing, and the truck was moving too fast for another. He gazed dazedly at the long chain behind, used for redrawing the truck when emptied.

"Good God!" he muttered, passing his tongue over his lips. "We're in a thorough mess now, old girl. What on earth are we to do?"

"Jump! Better break our legs than get pitched into the fire!"

"We'll kill ourselves jumping off at this rate, Nan! We'll have to hang on for a while, and jump for it, if the worst comes to the worst."

The Fugitives Alarmed

THE truck moved faster and faster, carried by its load and the steep tilt of the tunnel floor. . . . At length it rounded yet another bend, and far ahead the two beheld the red glow which they knew came from the furnaces. Here, one man alone did the work.

Mechanical devices alone toiled—vast arms of metal-controlled colossal cauldrons and crucibles, switches and buttons actuated the machinery which sifted pure metal from impure—one man alone in a cool box jammed with apparatus controlled the metal monster which was fed with the life-blood of the mammoth refinery. . . .

Horror on their faces, Dave and Nan stared ahead as the truck careered down the remaining slope.

"Look!" Nan shouted abruptly. "It stops there—tips over and throws its load into the fire—then comes back up the other line—"

The truck went on relentlessly.

"That chain and girder there—just beyond the edge!" Dave bawled hoarsely. "See it? Jump for that! Last chance—"

The two clambered over the side of the swaying truck and clung on tenaciously. But six feet to the end of the line, then— They leapt, madly and blindly, across the gap to the mighty chain which hung down into the seething, boiling furnace below.

With clutching fingers Dave clawed at the heavy links, swinging like a pendulum in mid-air. He gave a shout. Nan was just above him, clinging with one hand, twisting from side to side. Her frenzied voice came down to him.

"Dave! I can't hold! I'm falling—"

She twisted further round, and Dave clutched his own link with one bent arm. He flung out his other arm and braced himself for a sudden shock. . . . Nan screamed and suddenly dropped from the link above, but immediately the arm of Dave crushed around her waist and dragged her to him. "Grab hold! Quick!" he panted. "Hurry! You're a weight!"

Her hands seized the link fiercely and Dave relaxed his grip with a low sigh of relief. . . .

Ghastly, sickening waves of heat came beating upwards, with clouds of acrid, choking smoke. Below—far below—the white hot sea of the molten metal boiled and bubbled turgidly. . . .

Slowly, shakily, Nan crawled painfully up the remaining length of chain to the top, and at last scrambled out on the great girder, from which the chain depended. Fixing herself so she could not possibly fall, she paused and extended a hand to Dave.

"Gosh! That was close!" he breathed, as he came up beside her.

"I thought I was finished!" Nan spoke tremulously, and a short breathless laugh escaped her. She looked downwards into the seething murk far below. "What now?" she asked.

"Carry on," Dave responded, and commenced to worm his way, little by little, along the gigantic girder which formed the arm of this crane-like machine. Presently he came to the vertical support with its footholds and began to descend carefully. The task was not difficult, and very shortly he and Nan were together on the concrete floor.

To their rear was the metal-pit; before them, another tunnel-opening.

On Terra Firma at Last

DAVE ruminated, "The underground resources of this city are pretty vast, and I've no idea what we may run into. The only thing to do, old girl, is to carry on until we finally come to the surface. If we ever get there, we can lay other plans. If anybody comes along we shall have to do our best to hide. Come on. We've got no lights, so we'll have to trust to our sense of touch."

"I'm ready if you are. Lead on. Anything's better than just stopping here."

They advanced slowly, and within a minute the blackness of the near-by tunnel had swallowed them up. Ahead there was not even a hint of light, and behind only the dull reflected glow from the metal-pit served to provide a faint illumination. In time, however, this too faded, and complete blackness decended. From a seemingly vast distance, smothered and heavy with the intervention of solid earth, came the throb of New London's factories. In some curious way, it was comforting: it helped to maintain a grip on earthly and mundane things. . . .

Time passed, and fatigue and reaction began to slowly assert themselves. Nan walked with dragging footsteps, and Dave hardly a whit the better.

"We've got to go on, old girl," he breathed, seizing her arm and striving vainly to see her face in the ebony darkness. "We can't stop here, and the tunnel can't last forever. It leads to the open somewhere. The very draught of fresh air proves that. . . ."

A Vision of Light in the Open Air

THE girl said nothing, and the plodding advance continued. After perhaps ten minutes Dave stopped abruptly. "Look ahead, Nan. Light! Yellow light! Go cautiously."

Hope renewed, fatigue was to some extent allayed. Withal, care was exercised to its limit, and with noiseless swiftness the two sped onwards, quickly now, thankful to be able to use their eyes again and escape from the impenetrable blackness. Again Dave stopped, and he and Nan looked at each other with startled eyes, as a series of screams and shouts came floating from the lighted square ahead. Quite suddenly the din formed itself into a string of husky oaths, the crack of a whiplash, and a high-pitched voice shouting with pain.

"There's some foul work or other going on there!" Dave muttered, clenching his fists . "Come on!"

"But Dave, think of—" Nan shrugged her shoulders hopelessly as Dave unheedingly tore up the remaining stretch of passage as fast as his legs would take him. At a run she followed him, and then stopped involuntarily at the entrance of another underground workshop at the sight she beheld.

Close to a machine an old man, somewhat bent and obviously of no great physical strength, was crouching vainly from the slashing blows of a vicious whip.

Wielding the whip was a powerful fellow with gleaming bare shoulders and immensely muscular arms. A revolting profile, with flattened nose and prognathous jaw, was silhouetted against the yellow light in the roof.

Dave to the Rescue of an Old Man

"SO you thought you'd escape, huh?" the man demanded, pausing for a moment. "Let me tell you this, you old fool! No man ever escapes from this underground workshop—ever! See? And here's a bit more of the lash to teach you—"

"That's where you're wrong!" snapped Dave, leaping forward lightly and clutching the man's wrist.

"Eh? What?" Snatching his hand free the man stood glaring fiercely. "An' who the devil are you, anyway? Another one just trying to escape, eh? Well, take—"

Dave wasted no more time on words. He swung round his right fist with all his strength and dealt the man a terrific blow on the side of his jaw. The surprise nature of the assault took him completely off his guard, and with a foul oath he fell over backwards upon the concrete floor.

"Quick!" Dave panted, jumping forward and seizing the old man by his arm. "We've got to get out of this! Anywhere—anyhow! Are you trying to escape?"

"Yes—yes, and—"

"Never mind that!" Dave jumped forward and knocked over the fellow with the whip as he was about to gain his feet again. "My wife and I—also fugitives," he flung out. "Come on!"

Half carrying the old man between them, Dave and Nan ran down the tunnel on the opposite side of the chamber, floundering ever and again in the darkness and banging themselves against the walls, until finally, as no sound of pursuit made itself heard, Dave called a halt and a rest.

"Thank goodness there are dozens of branch tunnels," he murmured. "There's no way of finding which way we've gone. How are you, sir?" he asked of the old man, as they all three sat down upon the floor.

"All right, thanks to you; only a little out of breath," came the quavering reply from the darkness. "Really, though . . . to whom am I indebted for this act? You saved me from that whip, and have helped me on the way to the freedom I was trying to find alone."

"I'm Worker 7788—and this young lady here whom you saw in the light of the cavern, is my wife—4365Z."

"Never mind numbers. What are your names? We are friends, I—hope? I am Professor Rupert Athlinstone. I am a scientist—or rather, I *was* a scientist, until this accursed monster came to rule the world."

"Indeed, sir?" Dave spoke eagerly. "My name is David Elton; I, too, am a scientist. My wife is named Nancy—Nan for short."

"David Elton. H'm! I seem to have heard your name, young man, in connection with some experiment on the new wireless transmitters at Melthinstowe."

Professor Rupert Athlinstone

DAVE smiled with inward pride in the darkness. "Quite right, Professor. I am the guilty one. I say, though—how extraordinary to meet another scientist! Why, between us—forgive my presumption, sir—we might be able to do something to alter the ghastly mess the world is in. Of course, I don't pretend to be as far advanced in knowledge as you are—I haven't even attained Professorship."

"We're up against a big problem, son," the old scientist replied. "You see, this Intelligence is not a human being—he is nought but the creation of some misguided scientist. I have found that out for myself. Somehow, some scientist has been ingenious enough to find a way to make use of the entire human brain capacity, and has created a synthetic being around it. May that man be cursed to his dying day—if he's not already dead!"

Dave clutched Nan's hand convulsively in the darkness.

"But how can you be so sure that the Intelligence is man-made, sir?" he asked tensely.

"I have been employed in the laboratories, son, and close enough at once to see and study the Intelligence himself. He has no emotions at all, no soul, no passionate impulses, cannot laugh or cry, be humorous or despondent. He is just one vast intellect, with a body so flawless and nerveless that he just cannot be a human-begotten human being. He is a laboratory creation. I once worked out a plan of my own how to accomplish so great a feat, but I stayed my hand, because I knew what destruction and disorganization such a being could bring on the world at large. . . . Now some other scientist has done the same thing, without any foresight, and precipitately. The fool! The consummate idiot!"

"What would you say, Professor, if I told you I was the man who did it?" Dave asked bitterly.

Dave's Bitter Announcement

A SHARP gasp of amazement came out of the darkness. "You! Good heavens! Surely— It's incredible!"

"I'm afraid it's true, sir. I thought of the idea, and—"

"Yes, but did you actually make the creature and release it upon the world?"

"I—" Dave began, then Nan suddenly interjected. "No, Professor, he did not. He thought of the idea, and waxed enthusiastic over it. He called in two experts, and they made the creature, didn't they, Dave?"

"They did," Dave assented, and proceeded to give an account of the happenings connected with the making of the Intelligence, up to the time of the altered world and his own incarceration in the city of New London.

"I see," said Athlinstone at last in a grim voice; then in a more tolerant tone, "My boy, you were not to blame, don't think that. It was up to your more experienced partners to have seen what such an experiment would mean."

"Professor Ross had his doubts from the outset, sir, but Dr. Soone influenced him."

"I can well credit that," Athlinstone replied in a hard tone. "I have met Soone, and he's nothing more than a smooth-tongued scoundrel, entirely blind to everything save his own ambitions. Brilliantly clever—but underneath it all, a devil! No, son, you were acting in what you thought were the best interests; you were inexperienced and impetuously generous to a very hard and intolerant world. At your age I would have done exactly the same thing. Thank heaven, though, I only had the idea quite recently, when I could first sum up the ways of men, and how they would react to such an innovation. You say your present wife—you of course were then unmarried—tried to dissuade you?"

Nan's Objections of Long Ago

"YES. Like a pig-headed idiot I wouldn't listen."

"In any case, son, Soone would have gone on with it, so you have nothing to blame yourself for."

"I am trying to level things out, Professor—right the wrong my own mind virtually conceived."

"You have a plan of some kind?"

"Not the vaguest, yet. Perhaps we might be able to think of something between us, as we're both in the same profession."

"I did have hopes, but unhappily those devils destroyed my workshop at the time they captured me. I have nowhere to work."

"Then—then where were you making for, sir?"

"Anywhere!" the old man returned almost savagely. "Anywhere out of this city, to some place where I can think and view the position! That beast with the whip caught me, and. . . . Well, never mind that! Where were you making for?"

"Like you—for anywhere," Dave replied slowly; "but, do you know, I have an idea. My own laboratory is some two miles from the city and being underground is quite inaccessible to any stranger. What do you say if we try and make for it?—all three of us? I have a good selection of equipment there, and perhaps we'll be able to figure out something. What do you say?"

The Attempt to Reach Dave's Laboratory

"IT'S a wonderful idea, son, and I thank you from the very bottom of my heart. The risk of getting there, though—beyond the city. . . ."

"We'll do it!" Dave interjected confidently. "But we won't if we sit here much longer. There'll be search-parties finding us before long! We'd better get on the move while things are still quiet. Can you last out, sir?—and you, Nan?"

"I am quite prepared," the Professor responded, gaining his feet.

"It's not a case of lasting out," Nan remarked from the darkness; "we've got to go on or give up everything we've gained so far. It's literally a matter of life and death. Carry on, Dave—we're ready."

CHAPTER VI

The Genius

LATE evening found the three fugitives at the base of one of the many ventilation shafts of the underground tunnel. All through the afternoon and early evening they had skulked in the deep shadows—for the shaft threw a faint light in the gloom—pressing themselves against the wall in the complete darkness, when anybody happened to pass on his way to the underground workshops. These individuals carried lights, but fortunately they were relatively weak, and being unprepared to find any escaped workers, they took no particular pains to look searchingly about them. Such moments, nevertheless, were tense and fraught with danger, but each time the dense shadows and unwariness of the passer-by saved the three from discovery.

Exhausted though they were from constant suspense, labor, and absence of food, their determination to escape the city at nightfall was no whit abated. . . . As the pale light of after-sunset slowly faded from the sky and the diffused gloom of the summer night advanced, Dave moved from his position and looked up the colossal shaft. A circle set with stars hung far overhead.

"I think we might venture now," he murmured to the others. "All seems quiet above. We'd better risk it. You go first, Nan; you next, Professor, and I'll come last—then if either of you slips, I can save you from falling, perhaps."

Dave lifted the girl up to the first rung of the ladder locked into the wall of the shaft, and she slowly climbed upwards, her heavy boots scraping noisily on the rungs.

"Quietly!" Dave whispered. "For the love of Mike, Nan!"

"Sorry. These boots are so clumsy." She went on steadily.

The Professor, although not particularly agile, managed somehow to advance upwards rung by rung with Dave directly below him, anxiously on the alert for the first sign of a slip. . . . All went well, however, and after a seeming eternity Nan topped the shaft and peered cautiously about her. "All quiet!" she breathed, as the city lay silent on her right hand, work for the day having ceased. On every other side stretched the towering sides of the valley in which the city lay.

With great care, making as little noise as possible, the three climbed the shaft rim and presently stood up together under the stars.

Under the Stars at Last

"GOOD!" Dave murmured in satisfaction. "No signs of pursuit, anyhow. The thing now is to find a way up the valley side and through the woods to my laboratory and home. It's going to be hard going, tired as we are, but there's nothing else for it. We daren't stop a moment if we're to get through."

"Only too true," agreed the Professor. "Let us be going. I can stand more yet."

"What about you, Nan?"

"Don't worry over me, Dave. I'm not made of putty, anyhow."

"Good, old girl. You're a sport. Come on!"

They set off across the short, flat grass of the moor, away from the city, towards the valley side. They reached it without mishap, for there were no city dwellers on these outskirts. The city itself was entirely surrounded by a high wall and guarded at many points, but thanks to the ventilation shafts bringing them up beyond the city the three had escaped all that hazardry. The thought of fugitives using the ventilation shafts as a means of escape had probably never occurred to the officials of New London. There was nothing to live for beyond the city, in any case; all home life had long ceased—only in extreme cases like Dave's and the Professor's was escape worth the risk. . . .

The moon was rising, yellow and globular from the purple mists as the three toiled wearily up the valley side. It was a hard and arduous climb, for the way was strewn with small stones and rubble, and in places the inclines were steep and precipitous. By climbing and resting in turn, however, they managed little by little to continue upwards, until at last they topped the edge of the valley and had the spacious moorland before them again . . . Far below them New London lay a twinkling enormity under the moon, a pool of light-dots, surrounded by the frowning, dark masses of the valley side. Dave looked down at it and smiled a little grimly.

"We've got something on our plate to disorganize all that, and bring the Intelligence himself to destruction, eh, Professor?"

"Indeed we have," the old scientist assented gravely. "Still, we had the brains to make the Intelligence—you in practice, and myself in theory—so surely we ought to have the brains to destroy it! We will devise something with our joint activities. I am confident of it."

A Plan Wanted to Compete with and to Destroy the Intelligence

NOTHING further was said, and the long journey across the moor and through the forest was continued in silence. The woods possessed a strange ghostliness in the moonlight. Once an owl hooted eerily, and somewhere a branch snapped like a rifle shot. Underfoot small branches and dead twigs crackled noisily no matter how lightly the three trod. Here and there little glades and clearances leapt into phantom-like relief in the moonlight, to be instantly passed as the progress through the inky shadows of the woods continued.

The three were close to the point of exhaustion, when at last the underground home was reached. Dave fumbled wearily with the combination lock, and at last it clicked beneath his aching fingers, cramped and bruised from the climbing and tugging he had undergone in the past twelve hours.

The three passed into the hall, and Dave carefully resealed the door—a door proof against all the acids and explosives in existence. He switched on the light and led the way into the spacious drawing room. . . .

Despite the curiously deserted air that hung over the place, and the musty smell indicative of long absence, the three sank incontinently into easy chairs and for a few minutes at the least, made not the slightest effort to speak or move. Then with a tremendous effort Dave aroused himself.

"I'll go and get something to eat and drink," he said, bending down and switching on the electric fire. "I won't be long."

Within ten minutes he was back with sandwiches and hot coffee. With typical masculine clumsiness he placed them on the table.

"Come on, Nan—and you too, Professor. Let's have a meal; then we'll be better."

The two wearily drew up to the table and ate with purely perfunctory effort. Half way through her second sandwich Nan's head was lolling gently to one side ever and again, but with a start and an effort she aroused herself each time.

"Sleepy?" Dave asked gently.

Sleepiness Invades the Party

"SLEEPY! Never so sleepy in my life before. I—I—" Even as she spoke her sandwich dropped from her fingers to the carpet, and she slumped gently back into her chair, breathing deeply and regularly. Dave grinned and looked at her admiringly.

"She's a wonderful girl, Professor—a girl a chap can be proud to call his wife. She's got grit to the backbone. Excuse me a moment, will you?"

"Why, certainly." The Professor seemed to have transiently revived under the influence of hot coffee and sandwiches. He looked on with a smile as Dave picked the girl up bodily in his arms and carried her carefully to the next room. . . .

"Dead off," Dave remarked, as he returned. "Which reminds me that I'm in no fettle for a ten mile walk. We must get sleep before we do a thing further. Come with me, sir, and I'll show you your room."

"Thank you, my boy—thank you."

The following morning found all three normal again, in the matter of energy, at least. True, bruises and intense stiffness were the price of the previous day's proceedings, but as time passed these inconveniences wore off. After a hearty breakfast Nan took over the control of the domestic regions with her customary, unobtrusive skill, and Dave and the Professor retired to the laboratory.

Dave had been agreeably surprised at the old fellow's appearance in the daylight, and after a long rest.

He seemed less bent and shaky, and his lean face had lost all its former tendency to the cadaverous. He was fairly tall, and somewhat narrow-shouldered. The immense forehead, the keen grey eyes, and square chin bespoke the man of intellectual power, and patient determination in the face of set-backs.

Professor Athlinstone in Dave's Laboratory

DAVE watched his quick, capable hands, as he tapped instruments and bottles during his survey of the laboratory. At length he turned and remarked:

"You have a well-equipped laboratory here, son."

"I'm glad to hear you say that, sir." Dave moved forward, hands in pockets. "I've been improving on it for years now, and I flatter myself it pretty well contains everything of use in the chemical and scientific line. . . . And now—please don't think I'm trying to hurry you at all—I would like to know what you propose to do. For every day that the Intelligence is in power the world gets harder and harder to release and to bring back to the normal. We must devise some plan or other, and that very soon. And when we make that plan we must risk our all—to win or lose!"

Athlinstone looked at the young eager face searchingly for a moment, then he smiled paternally. "Good for you, boy! You've got character. Every word you have uttered is correct. Yes, our plan must be sound from beginning to end . . . must be as solid and immovable as New London itself!"

"No small job," Dave muttered. "I confess, for myself, that I have no plan at all yet. Have you?"

"Yes . . . I . . . have," Athlinstone responded, slowly and pensively. Then without another word he seated himself at the table and drew a sheet of paper and a pencil towards him from the rack. For a while he figured apparently at random and traced concentric circles with the air of an expert; then dropping the pencil very abruptly he sank down into deep thought, from which Dave did not dare arouse him. . . .

At last he spoke.

"Dave, there is only one way to overcome the Intelligence!"

"And that is?" Dave asked eagerly.

"To make something cleverer than himself!" The Professor sat back in his chair and awaited the effect of his statement. He did not appear surprised at Dave's startled expression, or his incredulous voice a moment later.

The One Way to Overcome the Intelligence

"BUT, sir—how on earth are you going to do that? The Intelligence is the quintessence of all that is intellectual. There cannot be anything on the earth cleverer than he!"

"There shall be!" Athlinstone returned grimly. "I have already mentioned to you that I once evolved a formula for the creation of a being almost identical with this one of yours—which is now the Intelligence. But, now we have seen what an uncontrolled, synthetic intellectual monster can do, we must guard against that, and instead make a brain machine which is solely under our control, and which will only do what we want. You follow?"

Dave sat down. "Yes, I quite follow. Tell me, what do you propose to do?"

"Make a man, not of flesh and blood, but of machinery! In this machine we will install not an actual brain as we know it, but high powered instruments capable of amplifying our own thoughts to whatever extent we desire. By that means we can always think higher than the Intelligence, and in the end, you can rest assured, machinery will get the better of even the Intelligence's vast intellect. It will take time to build this machine, but when it is finished I am sanguine that we will have the position entirely in our own hands!"

"I see," Dave assented, nodding slowly. "We will amplify our own thoughts, then reflect them, putting them to such uses as we deem fit?"

"Exactly that. You have the equipment here necessary for such a purpose."

For a moment Dave considered, then he thumped the table top decisively. "It's a wonderful idea, sir! About the only one which will work, I should think. We can get busy right away, and—"

"Just a moment, my boy, just a moment," Athlinstone murmured, raising his hand. "There is another thing yet I have to discuss with you; something that will aid us considerably. A mind-directional beam instrument."

Dave stared almost rudely at the old genius. "A what, sir?"

"An instrument which I myself have perfected. Unfortunately, at the time of my capture, it was destroyed along with my laboratory, but as you have all the material here for the building of another one, I can construct it in two days at the outside. This instrument is really an invention for projecting thought vibrations—thoughts send out impulses, as you are aware—and also, my little machine receives them. You see, this instrument of mine works like a wireless transmitter, but, instead of transmitting radio-waves, it transmits thought-waves, and, if a person be supplied with one of my tiny transmitters—and it matters not how far distant he or she may be, since there is no barrier to thought-vibration—the person can send his thoughts through its agency. It matters not where it is on the person; it vibrates perpetually. My receiver picks them up. They are then transformed into their original condition, and projected on a small screen. Of course, the result is a moving picture of whatever is in the person's mind. You see?"

"Wonderful! Wonderful" Dave breathed. "How, though, do these thoughts travel? What do they travel on?"

A Beam Speech and Thought Transmitter

"THEY travel on a beam—an invisible beam—emanated by the transmitter. That is its secret. The advantage of such an instrument will be that, wherever you may be, you can always communicate with me *via* thought, even if the transmitter is fastened by a cord about your neck and hangs down on your chest. Or, if you are at the receiving end, I can communicate with you. The transmitter is no larger than a cameo brooch. One of the first things I am going to do is to equip ourselves—your wife included of course—with these transmitters, and fix the receiver here in the laboratory. When that is done we will get to work with the Intelligence No. 2—and it is going to be the saviour of the world—not the destroyer!"

Intelligence No. 2 Is to Save the World

"YOU'RE right there, sir!" Dave declared heartily. "I begin to think that Heaven itself led you my way yesterday. With your genius, I feel doubly secure. We'll win in the finish—or die fighting!"

"We'll not die," Athlinstone answered quietly, and rising to his feet began to search round for the various components essential to his astonishing device—the mind-directional beam instrument. . . .

. . . .

Two days elapsed before Athlinstone's startling invention was completed. Two days of close contact with the old Professor had revealed to Dave that, clever though he himself was, the old man was infinitely cleverer. Had he been a lover of publicity and in the limelight—which he certainly was not—Athlinstone could have become the leading scientist of the day in the old order of things. He preferred, however, to keep to himself, and it was perhaps this aloofness from others that promoted the unhindered development of his extraordinary intellectual powers. Subjects which would have been difficult even to a trained scientist seemed like a child's problems to him. If ever a man was fitted mentally to invent a machine to overthrow the Intelligence, Athlinstone was certainly that man!

The completed mind-directional instrument resembled, in effect, a complicated wireless set, possessing a dynamo of its own. The panel was occupied by only three cerebrated dials and a button. On the top of the instrument reposed the tiny ground-glass screen which revealed, in movement and sound, the exact thoughts of the person at the transmitter, whether far or near.

"Dave," the Professor smiled, handing him a small, square object hanging by a black cord, "take this to your wife, ask her to put it around her neck, and tell her then to think of anything she deems fit, and you will see on this screen what the result is."

"Right, sir."

Dave went off and found his wife working the instrument which created synthetic foods—the wonderful little machine, which had provided food in plenty for over three years, and could go on doing so eternally if necessary. She smiled a trifle sceptically at Dave's request, but nevertheless complied with his wishes.

"Think of anything you like," Dave said once again, and then departed to the laboratory once more. . . .

"Ready?" the Professor inquired, his hand on the switch of his instrument.

"Yes." Dave grinned faintly. "Nan seems to be rather on the dubious side, Professor. Anyhow, she is game enough."

Showing Dave the New Transmitter

"SIT down, Dave, and watch this little screen." Athlinstone quietly motioned to a chair, and pushed in the switch of the receiver. A hardly distinguishable whirring arose from the generators. Slowly, a suggestion of light crept over the lifeless, ground glass face of the "imagor." Followed a sudden pinging sound, resembling the sudden replacement of a telephone receiver upon its hook. . . .

Dave leaned forward and stared at the screen amazedly.

Upon the ground glass plate the figure of Nan became slowly visible, surrounded by the familiar articles of the model kitchen. She appeared to be gazing straight before her, a smile, still slightly sceptical, forming on her lips. Then, quite abruptly she appeared in different surroundings—in a glorious garden, redundant with incredible flowers and foliage. Slanting sunlight was catching the shimmering fairness of her hair . . . The view faded, then with bewildering rapidity she appeared in strange and unearthly surroundings, time and time again—upon each occasion attired in different clothing, and seeming, by some unexplained process, more lovely with every change. Ordinarily she was not beautiful; hardly even pretty. She possessed keen and practical features and a splendid pair of gray eyes, but her mouth and nose were altogether too disproportionate to permit of even the vaguest claim to beauty.

The Transmitted Image of Nan

IT was curious to Dave, for this very reason, to observe how these defects were absent in the transmitted image of Nan. From head to foot she was a literal shimmering magnificence—womanhood superb —a glorious girl in glorious environment.

Again came the pinging note. Dave looked up to find Athlinstone smiling somewhat enigmatically.

"Professor, Nan is not, I feel sure, so beautiful as that!" Dave nodded dumbly to the screen, now blank and lifeless. "And those surroundings! They were absolutely unearthly—heavenly! I've never seen anything like them before."

"They were purely the figments of your wife's imagination, Dave. Remember that this machine reflects the thoughts. You saw exactly what was in her mind —she envisioned herself as an ideal woman in ideal surroundings. You saw, in brief, exactly what she thought!"

Dave slowly shook his head and smiled ruefully.

"And to think I considered myself a good scientist!"

he remarked with dry self-condemnation and some envy.

"Needless flattery for me, son," Athlinstone said quietly. "You must not forget that I am nearly thirty-seven years more experienced than you. In thirty-seven years it is quite probable that you will be able to exceed my efforts. . . . Which reminds me, Dave, that the making of this instrument has revealed something else to me—a plane of vibrations are set up by a brain's thoughts; but the action of a negative vibration wave—that is one of sufficiently low frequency to prevent and block these waves—can render us completely proof against anybody's thoughts."

"It sounds good, Professor," Nan remarked, as she came into the room. "Really, sir, you positively ooze ideas. Oh, how did my thoughts go down, by the way?" she asked mischievously.

"Perfectly," Dave responded, putting an affectionate arm about her shoulders. "We'll show you the instrument in action a little later on. At the moment I just want to hear about this new idea of the Professor's. Vibrations which can stop a mind probing beyond a certain distance may come in mighty useful as a weapon of defence against the probing Intelligence."

The New Idea Has Still to Be Worked Out

I CANNOT discuss it now to any extent, though," the older man remarked, shaking his head. "I have the idea—but I must work it out. I want to make it impenetrable—so that not even the all-powerful Intelligence can break the barrier. It will take time, of course, but when it is complete, along with my mechanical brain-power amplifier, we will be in a position to give the Intelligence what is owing to him."

"We should be," Nan admitted, fingering the black cord at her neck; then, as though it had suddenly taken possession of her thoughts—"Tell me, Professor, am I to keep this little box of an affair upon my person?"

"Certainly, Nan. I have one, and Dave, so you of course must do likewise. If anything ever happens to any of us, the one who is safe can tune in this instrument of mine and tell by the scenes reflected what is taking place in the mind of the absent one. From these scenes we will be able to judge where the missing one is."

Nan laughed oddly. "Supposing, though, the other one did not think?'

"You can never cease to think," the old man replied gravely. "All the time these transmitters round our necks are picking up our thought vibrations, but they are not resolved unless the receiver is switched on—no more than a radio program can be heard until the set is connected. Yet the waves are still in the aerial. The program is there . . . unheard; and, in the case of television—unseen."

Analyzing the Operations of the Transmitter

"I BEGIN to see," the girl murmured thoughtfully, "At any time, then, by switching on your set, you can see exactly what any one of us is thinking? Even if asleep? The subconscious mind is at work even during sleep, is it not? We dream. . . ."

"Precisely. Always—until death—your thoughts, your very innermost thoughts, are reflected on the screen—the imagor. And, who knows, even after death, maybe. So," Athlinstone added with a dry chuckle, "have a care what you think about!"

Nan laughed. "I will. Tell me, though, Professor, how do you know you've got the right person? They'll all come in at once, won't they?"

"Typical of your keen mind, Nan. The answer to your question is 'no.' Each of us has a different mind, of varying strength—or, technically, different frequencies—therefore, these come in at different points of the controlling dial. Similar, in effect to the different metre wavelengths of wireless stations. On this instrument your number is 52, mine is 16, and Dave's we have yet to place. Come here, both of you, and I'll give you a thorough knowledge of how to work the instrument."

CHAPTER VII

Escape

AS the weeks passed, and the furious heat of that amazingly dry and glorious summer gave way to the cooler, shorter days of autumn, the amazing genius of Professor Athlinstone gradually expanded itself, to great and hitherto undreamed-of achievements. Having nothing to disturb him, so secure was the underground laboratory, he strained every nerve and fibre in a tremendous effort to complete the invention which he felt sure would overcome the Intelligence.

After the final perfection of his thought- transmitter, he set about an abstruse study of the vibrations which would stop thought-waves from passing. To find the precise vibrations necessary, demanded a considerable amount of experiment with the attendant failures and transient successes, but the old scientist went on doggedly. It was during the struggle to find the elusive vibration, that he stumbled upon that which the Intelligence already thoroughly understood—the fourth dimension. He found the exact mathematical relationship needed to place him in and out of the fourth dimension, and by a machine of infinite complication he did at last manage successfully to transfer himself into the dimension and out again. . . .

This problem mastered—fortituous though its inception had been—he continued with the vibration puzzle, until at length he had progressed far enough to construct a light metal helmet, which by a system of wires carrying the vibrations from a small battery upon the back, prevented outside thoughts from disturbing the wearer's brain. Having thus far succeeded, he struggled resolutely to find a way to use the vibrations over any area—to shield the entire laboratory, if possible.

There was to be no outside interference.

Where Is Nan?—Television

HE was intently studying the problem one early morning when Dave came rushing in, his face agitated and eyes full of alarm.

"Professor, have you seen Nan?" he demanded almost rudely.

Athlinstone looked up from his instruments in surprise.

"Why, no, Dave. What is——"

"She's disappeared!" Dave cut in pantingly. "She was in the bedroom half an hour ago, brushing her hair prior to coming down to breakfast. Now I can't find her. I've looked everywhere . . ." Dave stopped, his face haggard.

"Use the thought-receiver, my boy," the older man counselled quietly. "That will show you everything."

"By Jove, yes!"

Dave sprang across to the instruments and twisted the dial to No. 52. Switching on the generators, he gazed intently at the ground-glass screen. . . . For a flashing instant he caught a glimpse of New London, mighty and invincible in the rosy dawn—then came a view of Nan herself. She was standing in a small cupboard-like affair, with steel bands gripping her body in a ruthless firmness. Her gray eyes were wide open, unusually wide and staring, and her mouth and chin set hard. Dave gasped a little as he beheld drops of perspiration on her brow, which began presently to trickle down her set, white face. She seemed to be undergoing some titanic mental conflict. . . .

By degrees the view changed and the figure of the Intelligence himself, Dr. Soone, and several strangers came into being, still and intent. . . .

Then blackness. . . . The scene vanished and the screen became blank. Frantically Dave twisted the controls of the instrument—then suddenly he felt the Professor's restraining hand upon his arm. The old scientist's face was as set as granite, and the keen gray eyes were cold.

"No use doing that, son," he said, shaking his head.

"But, sir— The Intelligence! That damnable, filthy creature has got Nan somehow, and——"

"I know. I saw it all," Athlinstone answered. "Nan is in the clutches of the Intelligence, and for some reason or other she has lost consciousness—fainted, maybe. That is why we cannot get her thoughts."

Dave clenched his fists. "I'm going after her!" he rapped out savagely. "What's more, I'm going to blow up the whole vile bunch! Give me some fulminate of mercury, Professor. That'll blow the lot of them to Hades!"

"Yes—and Nan as well," came the steady answer. "And you! Good heavens, Dave, what are you thinking of? Fulminate of mercury would wreck the city! No, you had better wear one of my thought-proof helmets, and take one with you for Nan. If you can rescue her—which may God grant!—you will both be proof against any thought influence the Intelligence can devise. I would come, too, but I am slow and——"

"You are better here, sir," Dave answered, donning a helmet and pocketing another. "What do I do, by the way, if I want to send thoughts to you? They won't pass through this helmet."

"Take it off when you wish to transmit," the older man replied. "I will leave the instrument on, so that I will see you the instant you communicate. Good luck, Dave"—he shook his hand tightly. "If you get into difficulties, I'll try and find a way to save you."

"I know it," Dave replied quietly. "I'll succeed though, sir—never fear. And before I've finished—or rather before *we* have finished—the Intelligence is going to have a hot time of it. . . . Good bye."

The Story of Nan

NAN had been upon the point of entering the breakfast room, when, with staggering abruptness, she felt as though the entire floor was heaving violently beneath her feet. She clutched desperately at the wardrobe, amazed and frightened. Never in her life before had she felt so horribly dizzy; the whole room was apparently spinning round like a top. She took a lurching step forward, then stopped dumbfounded—transfixed. The room—the familiar surroundings, had gone! She was in an impalpable gray mist which swirled and eddied mysteriously, horribly silent, and maddeningly opaque.

"Dave!" she shouted desperately, making a faltering step through the dense, odourless fog. "Dave! Help!"

Not a sound—not an echo. A silence allied to the infinite; a solidity that rendered sight useless. Everywhere this gray and impalpable pall. . . . Gradually Nan began to realize that she herself was normal—steady, and not in the least dizzy. She was in the grip of something as yet beyond her understanding. Calmly she stood, silently waiting. . . .

Almost at that moment it was as though she literally fell out of the mist. She found herself in a small room with black draperies, the walls lined with complicated instruments. In a moment she recognized it as the room in which she and Dave had been interviewed by Dr. Soone at the time of their entrance into the city as workers. With a startled cry she turned round on her heel, to behold five figures before a table—one seated and the others standing.

"Dr. Soone! The Intelligence!" she jerked out, her startled eyes travelling from the cold surgeon to the massive-headed, white faced individual seated at the table. "How did I come here? Tell me!" She strode forward towards them and spoke insistently.

"Be seated, Mrs. Elton." requested Soone smoothly, indicating a vacant chair by the table.

"I won't!" Nan replied curtly. "Say what you've got to say, and——"

"Sit down!" Soone thundered, and so imperious was his tone Nan obeyed almost involuntarily.

"You were brought here by the practical application of my fourth dimension machine," said the Intelligence impassively. "We require you for a certain purpose."

Nan's Defiance of the Intelligence

NAN'S eyes flamed. "You'll get nothing from me—any of you!" she retorted defiantly. "I'm not afraid of you, anyhow."

"It is not a question of fear," responded the Intelligence, in his even, unnatural tones. "You know a good deal concerning plans that have been made against me. Before you are destroyed along with your husband and that scientist Athlinstone, you are going to reveal every detail of what they are doing, whether you like it or not. I have seen a good deal by projecting my own mind into your laboratory, but there are many things which you alone can tell me. I observe you are strong willed. I can read nothing in your mind of interest to me—only hate for me and my companions."

"And you will learn nothing more," Nan returned coldly.

"Your courage is to be commended, Mrs. Elton," remarked Soone, with a low laugh. "The only drawback is that you evidently overlook the fact that we have machines that can read your mind. You cannot defy those. Even the Intelligence himself cannot withstand their tremendous force."

"If you refer to the instrument with which you read my mind when I first came to this city—" Nan commenced.

"I do not," Soone interjected smoothly. "I refer to an instrument three times as powerful—one which will convey every minute detail from your mind of what is going on in your laboratory at home. We chose you because your mind will be easier to read than your husband's, or that doddering chemist, Athlinstone. Guards, do your duty!"

Before she could speak Nan was seized tightly by her arms, and half carried to a tall framework, six feet in height. A succession of levers were snapped into position, and, as a consequence, steel manacles shot out of the framework and clasped her body one after the other. The remorseless clamps closed immovably about her wrists, neck, and arms, then at her waist, knees and ankles. She found it impossible to budge even a fraction of an inch without cutting her flesh.

Reading Nan's Mind

SHE watched intently, trying to smother the inner fear that was slowly overcoming her, as the guards dragged forth an instrument on a tripod, fitted on rubber wheels, somewhat resembling a very complicated radio microphone. The black dial upon the front was a maze of switches and controls.

Soone motioned the guards to one side and stepped forward to the instrument, which was now directly in front of Nan. He looked at her, smiled faintly and coldly, and then switched on the power. There was no sound, nothing visible—but Nan immediately felt the awful power of the instrument. Her senses reeled as it absorbed the details of her mind and formed of it an instantaneous record. The strip of film, containing the record, was released from the side of the machine, like the tape from a tape machine, which the Intelligence studied, foot by foot.

Nan battled mightily to overcome the frightful force of the instrument. Her head ached violently, perspiration broke out from every pore of her trembling body. . . . She made a last enormous effort . . . then sagged gently so far as her bonds would allow.

Soone cursed softly and shut off the machine.

"Fainted!" he commented savagely. "And before we got any information worth while!"

The Intelligence shrugged. "It cannot be helped, Doctor. Have her put into the next room. When she recovers we will try again. There is nothing of interest here," and he thrust the useless strip into a container at his feet.

Nan was released from the clamps and carried bodily into one of the adjoining rooms, being laid upon a couch-like affair with powerful springs. Afterwards the door was locked by electrical impulse.

Soone returned thoughtfully to the table, dismissed the guards, and then looked at the two remaining—the Intelligence himself, and Eri, Secretary to the Intelligence, brilliant yet sly, crafty confidant in world-control affairs.

"Well," Soone muttered, "we're no nearer. I thought she would collapse under the strain. No flesh and blood can stand that sort of thing."

"Forget her for the time being," the Intelligence replied. "We have other matters to discuss."

"I know, but I still think we ought to conceive a way to get information from her. She'll collapse before that machine every time, and the same with the lesser one. What are we to do?"

"If the Intelligence is so brilliant as he believes, surely he can devise a means to overcome this problem?" Eri remarked with distinct sarcasm; then he started slightly as the Intelligence slowly rose to his feet and stared at him with his deadly eyes.

"Eri—repeat that!" he commanded.

Before the Secretary could obey Soone had seized him by the shoulder, and with one fling sent him reeling against the switches on the wall. For a moment he crouched, undecided.

Soone gave a warning look and the Secretary understood. He and Soone had many things in common and more than once had the Doctor saved him from instant destruction at the Intelligence's ruthless hands.

"Don't be a fool!" Soone snapped. "You ought to know better than to make such comments before the Intelligence. Sit down here and don't speak until spoken to!"

With an unnoticed glance of gratitude Eri obeyed. The Intelligence slowly resumed his seat.

"In some things, Soone, you have a better way than I have," he commented, in his implacable voice. "We will discuss our plans for universal conquest. You know the outlines."

"I know that you have overcome the earth and seek fresh fields to conquer," Soone responded. "What is your next move to be?"

The Conquest of the Universe

"CONQUEST of the Universe—conquest of the other planets that circle about us. I have derived a formula for the overcoming of gravitation—repulsory magnetic waves to be precise. Projectiles are already built. I plan to overcome the Universe—planet by planet—that is, those which are inhabited. And after that—beyond our little system into outer space. . . ."

"I would warn you," Soone remarked, "that on other worlds you may be up against brains that will supersede your own. I will take Mars for instance. Being of older development than earth, it is possible that extremely high intelligence dwells there. That will mean intellect greater than your own!"

"I admit no intellect greater than my own!" the Intelligence answered evenly. "I have set myself out to conquer the entire Universe, and I will not be stopped. Since I have solved the secret of eternal life by discovering the antidote for the poison which creates the condition known as 'age,' I am quite immortal—will never die! If it takes me a thousand or even a million years it matters not. I shall gain my end just the same."

"You forget—we do not live beyond the allotted span," Soone commented grimly.

"You can be replaced; you are not indispensible," came the cold answer, and the Intelligence stared stonily at the change of expression on the faces of Soone and the Secretary. "Now we will discuss the plans. Eri, set the machine for recording what I have to say."

The Secretary obeyed and the Intelligence commenced, his tone monotonously irritating.

Planning the Conquest

"FIRSTLY, Mars. Reduce the inhabitants, if any, to complete subjection, and make the planet subservient to the earth. I can then spread my forces to a fresh outpost and undertake the conquest of the next planet—Venus. If any inhabitants, they will suffer the same fate—and so on and so on. Mercury we will discount as lifeless, but the same need not apply to the outer planets, Jupiter, Saturn, Uranus, Neptune, and so forth. We may not find beings akin to ourselves, but at least we may find intelligence, which will come under my dictates. . . ."

Soone glanced at Eri as the Intelligence proceeded.

"The first projectile to Mars will be launched one month from to-day—November 27th. The projectile will be a trial one, carrying no passengers, for I wish to see how it behaves. My instruments will record everything. If it is the success it ought to be, it is the first step in the conquest of the Universe."

"It sounds colossal to me," Soone remarked bluntly. "Not that I am in the least unwilling; I have no room for scruples and sickly sentiment. What of you, Eri?"

"It is entirely as the Intelligence wishes," came the smug answer.

The Intelligence was silent for a moment, then—

"For the present we cannot lay further plans. Bring out that girl again, Soone, and we'll see what we can get out of her. She knows too much to be safe, and every time I try and read her mind she makes her thoughts a meaningless jumble from which I cannot derive anything. Try the small machine on her."

Soone rose to his feet, removed the magnetic control from the lock of the door, and flung it open. He disappeared inside, and then returned a moment later, amazed and ruffled.

"She's gone!" he ejaculated.

"Gone!" echoed Eri.

The Intelligence rose to his feet and stalked swiftly into the adjoining room. He looked round the steel walls with his boring eyes.

"How the devil did she get out of here?" Soone asked in bewilderment. "The walls are of steel, and the lock was such that even T.N.T. couldn't scratch it."

The Intelligence drew down his brows and for a while plunged every vestige of his amazing brainpower into solving the problem.

Nan and Her Husband

"I SEE them both; they are in the instrument and observing room," he said presently.

"You mean the girl and her husband?"

"I do! How they got out of here, I cannot grasp; it eludes me! Inexplicable! I cannot get to the root of the problem. Come!" He awoke to sudden action, raced swiftly from the room, and down one of the passages that led from it. Eri and Soone came close on his heels.

Presently they came into the colossal room which housed the Intelligence's amazing machines. Titanic telescopes and refractors, their tubes and lattices of steel as thick and lofty as the old-time Eiffel Tower itself, reached heavenwards; mighty whirring dynamos which controlled the instruments for harnessing the climatic conditions rose in solitary, squat, bellying masses at intervals; great bridges and stairs of steel straddled the whole wilderness of complication, to fall from the summit of which was to plunge either into the chasms of unthinkably tough metal between the engines, or drop into the heart of the merciless, whining gears themselves.

"There they are!" exclaimed Doctor Soone, pointing.

In the far distance, at the extreme end of the great room, almost hidden in a curiously bluish haze, were two helmeted figures, clambering over the colossal engines, or drop into the heart of the merciless, whining ing in the domed roof, through which projected the inquisitive lattice-work of the super-refractor.

"We can't stop them now," Soone exclaimed quickly. "By some uncanny means they've got out of that room and into this one. How Dave got here beats me utterly. And they're making good their escape!"

"Wait!" said the Intelligence, and staring hard at the two figures in the distance he suddenly threw every element of his enormous intellect across the intervening gap and commanded them to return. His strange eyes positively smouldered; it seemed as though little fires burned in their profound depths. . . .

The figures continued climbing. The Intelligence clenched his fists until the knuckles showed white. His jaw projected, his lips were set in a thin, perfectly straight line. The brows came down in a sharp V over the compelling orbs. . . .

Still the figures climbed upwards, becoming remote. Soone and Eri gazed at each other in dumbfounded amazement.

Perspiration began to trickle down the Intelligence's face as he strained his awful concentration to the uttermost. Then suddenly he relaxed. The distant figures still climbed on, and presently vanished from view.

Dave and Nan Too Much for the Intelligence

"THEY have proven unmoved by my will," the Intelligence said, and had he been capable of emotion an intense acidity would have unquestionably flavored his words. As it was they dropped with metallic coldness; the curious eyes flamed inwardly.

"You mean that your will was powerless against them?" Soone asked in complete astonishment.

"I do!"

"But the force you were exerting was sufficeint to turn an army around and force them back to you, let alone just two human beings. I felt the power even here."

"They were not affected," the Intelligence responded. "I must retire and study this problem. In the meantime, let them go. They will not escape me in the end, even though they have done so now. Come!"

CHAPTER VIII

The Intelligence Plans

NAN slowly returned to consciousness to find herself within the dimly lighted ante-chamber of the Intelligence's own room. For a time she lay still on the well-sprung couch, then something of the confusion and dizziness passing from her mind, she gained her feet and walked silently to the door. She tested it—it failed to yield in the slightest degree. She wondered how long she had been unconscious. Suddenly she remembered the awful machine that had been trained on her mind, and shuddered.

At a sudden muffled thud against the wall she looked round with a start. Somewhere above her something clicked; then came a rushing sound akin to a loudspeaker being switched on.

"Don't be a fool! You ought to know better than pass such remarks before the Intelligence. Sit down here, and don't speak until spoken to!" This she heard.

It was the voice of Dr. Soone, clear and distinct, from somewhere above her. She wondered what it was all about. Neither she nor anybody else knew that, in his fall against the wall, Eri had accidentally pushed up the relay switch, which brought the microphone in the next room into full life and relayed throughout the whole building, to every room, the entire conversation. Had the Intelligence but been aware that every being in the vast building was listening to what he believed were his own private plans. . . .

Tensely Nan listened.

". . . conquest of the Universe; conquest of the other planets which circle about us," said the Intelligence, and gradually went through the entire conversation.

". . . and the first projectile will be launched one month from today—that is November 27th. The projectile will only be a trial one, and will carry—"

Nan stopped listening abruptly and spun round with a fast beating heart as a something—something impalpable—began to materialize in the very air by her side.

With a slow transition the intangible became solid, and then suddenly resolved itself into the form of Dave, peering about him in the dim light.

"Dave!" Nan exclaimed in joy, and racing forward she felt herself lifted up in his arms.

"Nan—are you hurt?" he whispered, after they had embraced. "Have those swine done anything to you?"

"Only tried to wreck my mind—and failed!" she answered grimly. "But, Dave, why on earth have you got on that odd-looking helmet? And how did you get here—out of the air?"

Dave and the Fourth Dimension

"THE fourth dimension," Dave answered. "You know that the Professor has perfected a machine to enable any of us to move in and out of the fourth dimension at will."

"Yes, yes, of course, but—"

"And that he has perfected that thought-receiving machine of his?"

"Yes."

"Well, I communicated with him by thought and explained by writing and signs that I wanted to be transported from the moors into the Intelligence's headquarters by the fourth-dimensional system. I was in too big a hurry at first to think of it. I guessed from what I had seen in the thought-machine that you were before one of those devilish machines, so I came along here by the fourth dimension. I nearly resolved into the third dimension in the next room at first, but finding you not there I altered my direction and more by luck than judgment landed here."

"But the helmet?" Nan persisted, and as he fixed the other one over her head he explained its purpose. "Now wait a minute," he concluded, lifting his own. "I'll just give the Professor the O. K. to get us back to the lab, again."

He stood perhaps two minutes in silence, then as the pale mist gradually enveloped him and Nan again, he slipped the helmet back into position. . . . Then with an abruptness that was startling the mist suddenly vanished, and the two found themselves, not in the laboratory, but in the Intelligence's own instrument and machine room.

"Hell!" Dave exclaimed. "What the devil is Athlinstone playing at? We're miles away from the lab. and—"

"Never mind talk—move!" Nan exclaimed tensely. "Something must have gone wrong at the Professor's end. We've got to get out of this—and quickly."

"You're right there. Come on!"

They rapidly made their way between the roaring, ear-splitting dynamos and machines towards the immense structure of the refractor.

"To get out of here we'd better go up on the roof," Dave bawled. "After that we'll decide what to do. Come on!"

"Who first?"

"You. If you slip I can perhaps save you."

The Escape of Dave and Nan

STEADILY, with admirable nerve, the girl began to climb the ladder-like steelwork, up and up. She dared not look down on the yawning gulf of deadly machinery below, dared not even contemplate the frightful death that awaited one slip, which would mean contact with those shining copper wound cylinders, each carrying a load of tens of thousands of volts of electricity. . . .

The steel tower went up perhaps three hundred feet, on a long slant, towards the astoundingly lofty roof. . . . Suddenly Dave called a halt, and Nan forced herself to look back. For an instant her head reeled and a frightful cramped feeling came into her; then she was steady again, holding with hands that trembled a little to the cold steel.

"The Intelligence—Soone—and somebody I don't know," said Dave grimly. "I do believe the Intelligence's trying his mental stuff on us from the way he's standing." He chuckled drily. "This is one over on him at last, anyhow. Carry on, old girl—let him wear his massive brains out on these conductive helmets of ours. "Ready!"

The arduous, perilous climb continued. Once Nan slipped, and her face went white. For a time she had to pause and collect her shattered nerve; then again she struggled on. Far below, a stupendous distance, it seemed, the gleaming copper on the cylinders was still in evidence. At this height the vast roar of sound had merged into a common, bass humming, that throbbed queerly in the ears.

"Thank God!" Nan breathed out at last, clambering over the edge of the semi-circular gap in the roof. Yet even on that domed roof the refractor still projected a further three hundred feet into the air, its far distant end gleaming brightly in the morning sunlight.

On either side stretched New London, throbbing with all its usual power. The bullet-shaped airplanes came and went in the air-lanes with stupendous speed; here and there a helicopter rose vertically and soared away at a slightly slower pace.

"That's our best way," breathed Dave. "And we'll have to travel, too, before we're nabbed. I just can't think what can have happened to the Professor's end of the business."

The way he indicated lay across the very roofs of the city, and finally down the skeleton work of one of the aerial masts which served to control the radio-impulses which guided the airplanes to their landing bases. . . .

Without passing a further exchange of words the two rapidly jumped their way from roof to roof until only the control tower remained to be conquered. Here was a more difficult task. It necessitated a straight jump of four feet, or a fall to the moor three hundred feet below. They managed the task at the expense of bruised and bleeding fingers and shattered nerves. To descend the ladder in the control tower's centre seemed relatively trivial after the climb up the refractor-telescope. The only fear was that they might be observed by the control tower engineers, but all went well, and finally, pained and exhausted, they gained the solid earth, outside New London's boundaries. Here they paused for a brief respite.

Back to the Surface of the Earth

"DAVE," Nan said presently, laying a hand on his arm, "I've heard, authentically, that the Intelligence is going to start war on other planets, now that he has overcome this one."

"Just about what he would do. Is Soone in on this as well?"

"Most certainly. You don't expect that ambitious, cold-blooded creature to be anything else, do you? The test flights are to be made on November 27th—that is a month hence. We've got to do something about it, Dave! We can't let that monster start invading other worlds, which are probably peaceful."

"No—we can't." Dave's brow wrinkled in a frown for a moment; then he shrugged his shoulders. "Well, we can't think out a problem like that in a few minutes, and here above all places. Let's carry on and tell the Professor about it."

They stepped forward again, but at the identical moment they did so, the familiar yellow fogs of the fourth dimension silently enfolded them. When at length they cleared they were in the laboratory again, Athlinstone solicitously watching them. As they became clear to his vision he threw up his hands in welcome and incontinently embraced them.

"Splendid! Splendid!" he panted. "Dave, my boy, you did it!" He shook the young man's hand warmly. "I congratulate you! I am sorry for what happened," he went on seriously. "The machine jammed, and of course I was in a frenzy of despair lest you be recaptured. However, I worked like a madman and got it right again, and here you are! The danger is over."

"For the time being—yes," Dave assented, pushing a chair forward for Nan, and seating himself. "We're not out of the wood by a long way yet, Professor. The Intelligence is planning more dirty work, and if we have any respect for our planet we've got to stop him, before he finds himself up against minds which are too clever for him and brings down a rightly hostile world on our own innocent heads."

"What do you mean, Dave?"

Quietly Dave repeated what Nan had told him, and she herself embellished the details. When it was finished the old scientist sat in deep and thoughtful silence for quite five minutes.

"I thought that would be the next move," he said at last. "We will have to strain every nerve and fibre to complete that brain machine of mine. . . ."

The Professor's Brain Machine

"THE trouble is that he can project his mind into this lab. and see what is going on," Nan commented worriedly.

"No, Nan," the Professor answered with a slight smile. "You see," he explained, looking at their questioning faces both in turn, "I have found the right system by which to insulate this laboratory against thought-waves—just like the helmets on a big scale. At the present moment this laboratory is shielded by that same negative force which insulates the helmets. The most powerful mind in the universe cannot penetrate it. We are as safe as it is possible to be—and free to strain all our energies into the final great battle, which will mean either the destruction of this monster, or the end of ourselves! We have to stake—our all!" he concluded solemnly.

"I am ready," returned Dave grimly.

"Then I am too," said Nan with equal grimness. "The Intelligence must be destroyed."

"You are both young—you both have courage, as youth should have," Athlinstone murmured. "But if my brains can do it, and if the good God will help me through, I will see that there is no necessity for you two to expose yourselves to danger, with your lives hardly begun and your married life never once free of danger since the outset. It is a sin to expose youth to danger, and I shall work to a point where it will not be necessary. Now let us get to work. You, Nan, will carry on as usual—we cannot manage without your skilled hands on the domestic side. You, Dave, must help me in the laboratory. . . ." The Professor paused and smiled apologetically. "Forgive me ordering you about like this in your own home, but—"

"Rubbish!" Nan interposed with a laugh. "Why, Professor, we look on you by now as a sort of father. Indeed, more thoughtful than many a father knows how to be," she added reflectively, and went away into the kitchen regions.

Athlinstone stood quietly looking after her for a moment, then he shrugged his shoulders and smiled. Turning, he took Dave by the arm and said:

"You've got a good and courageous wife, my boy," he confided. "See that you behave yourself!" and they both laughed.

In the next half hour Athlinstone became the man of genius once again, moving here and there with surprising agility, controlling machines and instruments with delicate fingers, snapping out rapid, unmeaningly curt orders, assembling metal frameworks, doing a multitude of tasks with the ease and speed of a man twenty years his junior.

Between them, closely following the sheafs of plans, they slowly began to construct the metal machine in which all their hopes were to be sunk—the machine to overcome the deadly intellectual monster which held the world in its ruthless grip.

They worked on and on unceasingly, taking no cognizance of time. The point at issue was the safety of a planet, and it was a point that was ever more dominant before them. . . .

The Completion of Athlinstone's Brain Machine

THREE weeks later found the brain-machine completed. It had been three weeks of desperate energy and endeavor, in which the Intelligence himself had been almost forgotten. Shielded by the thought-repelling screen which the old scientist had placed over the laboratory, activity could proceed unhampered by the thought that the Intelligence knew every move as they made it. A curious exultancy filled the minds of the three at the thought of how they had so far managed to beat the intellectual colossus at his own game. Now only one week remained before the self-appointed ruler of the world should send off his first test projectile before wreaking his pitiless genius and power on unprepared and perhaps defenseless worlds.

"The preliminary tests are perfect," the Professor remarked, beaming, on the day following the completion of the brain-machine. "I have experimented to the full, and find that a steady increase in power can positively hypnotize an entire army—sufficient power can hypnotize a world to do one man's bidding. *What* a weapon! The Intelligence will never be able to defy a machine like that! Even he cannot stand against a steady and unvarying electric current."

Dave and Nan gazed at the massive boxes and switches which comprised the instrument, and then to the beaming face of the inventor hovering over them.

"You've done wonders, Professor," Dave breathed. "You're going to be the saviour of the world. I can feel it in my bones."

Athlinstone lit his pipe contentedly. "I hope so, Dave—I hope so. If not, I shudder to think of what may happen! Oh, and by the way, you had both better see how to shift the thought-repelling screen from this laboratory. We don't know what may be needed in the near future. I'll show you, too, how to operate this fourth-dimension machine of mine, so you can move yourselves in the dimension if necessary. Come along."

He moved across to the instrument-littered bench, and laid his hand on the repelling screen machine.

"This knob here is pulled out—so," he explained, suiting the action to the word. "That disconnects the current—I should say it breaks it—so that the electrical power to combat the thought waves no longer emanates into the screen of radiation about this laboratory. This lab. is now unshielded by the throwback screen. That clear? Good! Now, to move into the fourth dimension this machine here is used. This lever is pulled thus, and brings the angle of the fourth dimension into our own plane. The fourth dimension is a movable dimension, you understand. You step back, so—" and instantly Athlinstone vanished from view.

An Awful Surprise

NAN and Dave stood waiting interestedly for his return, when a sudden slight sound behind them caused them to start. They both turned with a simultaneous movement, smothering exclamations. For against the far wall stood the Intelligence himself. . . .

"Thank you for removing the repulsive screen," said the cold voice. "I have been waiting for that for weeks. You are now both coming with me, *via* the sixth dimension, to New London. I have plans for you two! I see you are both alone," he added, looking about him.

Dave and Nan said nothing. They were expecting Athlinstone to appear at any moment, but for some reason he did not do so. Possibly, as the fourth dimension did not prevent him hearing the conversation, he deemed it wisest to remain hidden.

"If you imagine you can order us about as to what we shall do, you are making a big mistake!" Dave snapped, and jumping over to the bench he seized the two repulsion helmets.

"Wait!" commanded the Intelligence's steely voice. "I order you—wait!"

Dave struggled mightily to throw off the hypnotic power of the creature, but without avail. With a curse at his own helplessness he swung round to meet the creature's eyes, glowing and wide.

"Now—we go!" the Intelligence said; and instantly the transportation to New London was accomplished.

Dave and Nan found themselves in the council chamber of the Intelligence, with Soone and Eri already there.

Quietly the Intelligence moved to his accustomed chair and sat down.

"Now, my friend," he said steadily, "I have reached a decision concerning you both. For a long time, ever since the begining of my rule of this world in fact, you have done all in your power to thwart me. You ought to have acquired sense enough to realize that you cannot overcome that which is your superior. You know I am superior to both of you—superior to everybody on the earth—yet you both have still persisted. There is a chance that you may stumble on something that will prove really useful to you and dangerous to me, therefore I have no alternative other than to be rid of you both. You understand?"

"I fail to see how we could help understanding," Dave replied coldly. "You're a clever man, Intelligence, and I am the first to admit it—but I still assert that the minds that made you can still find the way to destroy you!"

Can the Intelligence Be Destroyed?

"ONE of those minds is dead, the other is my assistant, and the third one is to be exterminated," returned the Intelligence. "In face of that, what have you to say?"

"That even the cleverest make mistakes!" Dave snapped. "You may think you know everything, but there's a good deal you don't know!"

"I suppose that you think that I do not know that for the past weeks Athlinstone has been engaged on a machine capable of destroying me?" the Intelligence inquired. "I suppose, also, you think I do not know that he hid himself in the fourth dimension when I arrived in your laboratory a little while ago? Fool! I have read all that from your mind, whilst you have been standing there. I will attend to Athlinstone, and the laboratory—later!"

Dave clenched his fists but remained silent. Inwardly he cursed the day when he had conceived the idea of this monster, who was destroying the morale of an entire planet.

"To-night," the Intelligence continued, in the same impartial tone, "I am releasing a test projectile into space—as your wife already knows—that also from her mind. I have decided that there is no reason why the projectile should not carry passengers; therefore I have ordained that you two shall be placed inside that projectile—and fired into space! You will have provisions for three months, and artificial air. If the projectile lands on the planet I intend it to do, you will stand a chance for your lives; if it fails, you will die in the void. Either way you cannot return to earth, and what happens to you is no concern of mine. That is my decision."

Dave and Nan made a futile attempt to disguise their horror. They looked at each other with blanched faces. Dr. Soone smiled coldly and Eri nodded complacently. The expression of the Intelligence did not alter in the least. He pressed a button upon his desk and two guards appeared, armed with paralyzers.

"Take these two and place them in Cell 16 in the Outer Wing," the Intelligence ordered. "Mount a triplicate guard and use the paralyzers at the slightest sign of disturbance. Inform—"

An Intruder—Danger to the Earth

HE stopped suddenly and looked round as a uniformed man burst into the room without the preliminary customary knock. The fellow's hair was disordered and his eyes wildly staring.

"Sir, sir! Professor Sanders must see you at once. He—"

"And why precisely dare you burst into this room without being announced?" the Intelligence demanded.

"I'm sorry, sir. Forgive me. I was excited. Sanders has found that the whole earth is in danger!"

"Indeed? What has he discovered? Why cannot he come to me?"

"He has found that the sun is collapsing, sir. It means that the earth will freeze."

Dr. Soone compressed his lips and looked at the Intelligence.

"If this is true, it's serious!" he said grimly. "It sounds too fantastical, though. Sanders has made a mistake."

"I doubt it," Eri remarked. "Sanders is a genius of astronomy. I think, sir, we had better do as he asks."

"Very well." The Intelligence rose to his feet and turned again to the guards. "Follow my instructions with regard to these two. Now go!"

Vaguely wondering what all the conversation was about, Dave and Nan were led passively away. Dave was sufficient of a scientist to know that, if the man Sanders was correct, the earth was indeed threatened with destruction. He wished he could be present in the astronomical observatory, but such a thing was impossible. Only captivity and eventual doom, it seemed, lay ahead. . . .

CHAPTER IX

The Fate of Athlinstone

PROFESSOR SANDERS was surrounded by sheets of foolscap and ponderous books when the Intelligence, Soone, and Eri arrived. Instantly he jumped to his feet and looked at the three men as though uncertain how to put his thoughts into words. . . . Then suddenly he found his tongue.

"A celestial disaster is liable to overtake the earth," he said solemnly. "For about six months I have been watching certain peculiarities in the sun's behavior and I have found that some agency, which must remain unknown I suppose, is causing the sun to collapse. . . ."

"But the theory is ridiculous," Soone protested. "Such an occurrence, if it ever happens, will be millions of years hence yet."

"Ordinarily, yes," Sanders agreed. "I have said, though that some agency is at work, possibly from another planet. This agency has the power of tearing off the electrons within the sun. . . . I see you do not follow clearly. Each star is composed of atoms. That's so, isn't it?"

"Certainly."

"Well, in the normal course of events these atoms, moving at the terrific velocity they do, will lose the outer electrons. When the last electron has gone the broken atoms will not be able to support the tremendous weight, and the sun will collapse. It will not disappear, but it will be of no use to the earth for warmth —or to any planet in the Solar System. This process would normally have taken millions of years, but somewhere in space some diabolical agency is speeding the process up, and I predict the collapse of the sun in—three years!"

"Good God!" Soone muttered.

"Get other scientists to check up on me," Sanders said. "I'd be glad of it—but see, here are the proofs. We are threatened with destruction—a freezing world —in three years. And no normal agency has brought about that solar condition! Minds, greater than ours, are deliberately preparing this disaster. It cannot be in our own Solar System, because that would mean their own planet would be doomed. It is something malignant—something beyond our understanding!" Sanders' jaw set squarely, and he pointed to the multitude of photographs and reports he had collected.

"Three years," mused the Intelligence, and gave himself up to thought. For a long time he stood rigid, exerting all his mental forces, but finally he shook his head. "There is no formula I can derive to turn away the menace," he said. "The only thing to do is to make preparations for withstanding the disaster."

"All the preparations in the world will be of no avail," was Sander's blunt answer. "It means death—by freezing!"

"You mean there is no way out?" Soone asked helplessly.

"None whatever! Even granting we could survive for some time, our warmth will escape inexorably into the vacuum, and in time we shall perish. We have three years to live—everybody on the earth has three years to live—and that is all. Who is it that has brought about this disaster we do not know."

"And my mind fails to discover," the Intelligence muttered. "Strange! Very strange! Since there is no way out—since all preparations are useless, there is only one course. To-night I send my test projectile into space. In the coming three years we must transport every human being from this planet to some other solar system, where there is another sun. That is all."

"A colossal task, and hardly commendable," Sanders said, shaking his head. "We know of no planet beyond the Solar System which is habitable. Do you propose to go careering about in the void to find another world with the earth's characteristics on which to place our people? To find such a planet would take years—let alone the time in transporting the human race."

"Very well, then, we will leave the human race to fend for itself," the Intelligence replied coldly. "We will tell them nothing."

The other three men stared in amazement.

"But we can't do that!" Soone ejaculated.

"Why not? You forget, Soone, that I know the secret of synthetic men—the same system by which you created me. I shall take the necessary machines for creating men like myself—a few picked men—and leave these humans to do the best they can. Why should I care? They are not like myself; I have no feelings for them, nor they for me."

Synthetic Men Insensible to Cold

EVEN Soone was astounded. Sanders simply stared blankly, and Eri looked dazedly from one to the other. To understand the viewpoint of the emotionless, sexless Intelligence was quite impossible. This cold-blooded inhuman decision to leave the human race to death, unwarned, was almost too much for the unscrupulous surgeon to tolerate.

"I read in your mind that you will inform the peoples of the world what is happening, and give them a chance for their lives," the Intelligence remarked. "I say that you will do no such thing! If you do, I shall know, before you can perform the act. So beware! Sanders, make further observations upon the sun and send the results direct to me. I will have your conclusions verified. Come, Soone, we have plans to make now. At once!"

For once in his life completely tongue-tied, Soone followed the monster and Eri, from the observatory. . . .

The cool dusk of the autumn evening had settled over New London when at length an armed guard came and released Dave and Nan from their stuffy little prison. He said no word and ignored all questions. With a cold and impartial dignity he conducted them from the prison building, through specially guarded ways, and ultimately to an immense quadrangle, flooded with the glare of superelectric arcs.

The Space Ship and Proposed Extermination of Nan and Dave

IN the full radiance of the light, reposed a cigar-shaped object, glittering magnificently. The tapering nose was pointed upwards towards the eastern horizon, at nearly sixty degrees. The dim evidence of a rope ladder was just discernible leading up to that needle-like snout. . . .

Quietly three men came out of the gloom. Neither Dave nor Nan needed to wait to discover who they were. The even tones of the Intelligence came forth, and the experts who were to watch and chart the progress of the test projectile into space, leaned a little closer. The whole affair was oddly weird. . . .

"My friends," said the Intelligence, "the hour has come, when I am about to put into effect the plan I have had in mind for many years—to exterminate you both! I need not dwell again upon your chances of survival. You understand them well enough. In this space-projectile are provisions for three months—air for six. You will have no means of guiding this vessel—it will be fired into space, far enough beyond the earth's gravitation to prevent it falling back. After that, automatic repulsion waves will control it. It is aimed at Mars, and the chances of you failing to strike that planet are almost at zero. You have a chance—but on a strange and unknown world. In the vessel you will find arms to protect yourselves. I do not desire to willingly kill you; I merely wish to be assured that you can never return. Also in the vessel you will find controls that will enable you to make a safe landing on Mars—a brake control, so if you are sensible you have no need to crash to dust. My thoughts will follow you through the gulf of space—I shall be able to visualize whether or not you have made a safe landing. If you do, the projectile is a success. If you do not . . ." and the Intelligence ceased to speak with infinite significance.

Athlinstone in Ignorance of the Matter

DAVE clenched his fists and squared his jaw. The masklike face of the Intelligence almost goaded him to a desire for violence. Nan clung tightly to his arm. He felt that she was trembling.

"No doubt you are wondering why Athlinstone has not seen your fate in the thought vibrating machine?" the Intelligence asked after a pause. "The reason is easily explained. I have intercepted all vibrations with a machine of my own. He knows nothing—and before long, I fancy, he will know, even less."

"You mean you are going to kill him?" Dave demanded thickly.

"That hardly concerns you," the Intelligence answered coldly. "You and your wife will have quite enough on your hands to preserve your own lives without worrying over that dabbling old chemist. The poor fool ought to have known better than to try to overcome me. Now get into that projectile!"

"I won't!" Dave shouted desperately, dazed by the fact that there was no way out of the situation. He had been clinging to the hope that Athlinstone would discover some eleventh-hour method of effecting a rescue. Now, however, the Intelligence had destroyed even that possibility.

"Get in!" ordered the Intelligence's smooth, implacable tones.

"Dave!" Nan panted. "We can't! We can't! Once we're out in space we're done for! Oh, why doesn't the Professor help us—"

Before she could conclude rough hands had seized her and borne her up to the rope ladder. Dave, fighting fiercely but futilely, came immediately after her. Step by step they were both forced up the swinging rungs, until the guards had flung them, bruised and panting, into the tiny chamber of the vessel. The hermetically-sealing clamps slid into position and the enormously thick manhole cover became immovable and impenetrable. It could only be opened from the inside by the automatic controls, timed to operate when the projectile struck Mars—if it ever did.

"Release the machine!" ordered the Intelligence, to his waiting technicians.

The Release of the Machine

SOMEWHERE a button flicked. The current shot from an unseen control board and released the power in the vast cannon-like pit beneath the projectile. With a titanic roar and colossal blast of super-heated air the metallic vessel shot upwards into the darkening sky, cleaving in a thin white line of transient heat across the faintly glowing stars in the eastern sky—and vanished.

Solitary, mysterious, never completely understood, Mars glowed in that eastern abyss. Serene in his red majesty—but grim and deadly when he became the goal for a single, unmanned projectile!

The passing days of anxiety, intense apprehension, and acute mental strain, wrought a decided change on Professor Athlinstone. Unable to leave the laboratory, unable to receive any news of Nan or Dave by the thought vibrator, he worked day and night to perfect some fresh device by which he could overcome the interference which was making the reception of thought vibration impossible for his machine. . . .

Instead of gaining the idea he sought, however, the strain was too much for his mentality altogether. He found he could not keep his mind on his work. He was weary and heavy-eyed, drooping through worry and loss of sleep.

Time and time again he cursed himself for a fool for ever allowing the Intelligence the remotest chance of penetrating the laboratory.

Five nights after the disappearance of Dave and Nan the old man, disheartened and bemused, was awakened from an exhausted sleep by a too familiar, metallic voice.

"Professor Athlinstone!"

He opened his eyes and blinked, rubbed them, and then sat up with a jerk upon the settee on which he had been lying. Like the phantasms of an unpleasant dream the figures of the Intelligence, of Dr. Soone, and of Eri were before him, with six silent, wax-faced guards close by.

"The Intelligence!" said Athlinstone at last, comprehending.

"Yes—the Intelligence," agreed the monster. "It has now become imperative, Athlinstone, to intercept your activities, before they become really dangerous to me. You were clever to conceive the idea of repelling thoughts; cleverer still to invent the brain-machine and thought-vibrating machine—but you have overlooked the fact that I am cleverer than you can ever be! In my hands you are akin to a new-born child!"

Slowly the Professor gained his feet and stared at the placid Intelligence with black-rimmed, sunken eyes.

"What do you mean?" he asked in a low voice.

"I mean—just this. Your former colleagues, Mr. and Mrs. Elton, are now on a journey to the planet Mars, in an uncontrollable projectile! They have a good chance for their lives, but you will never again see them on this earth—nor will any of us. You are cleverer than they are; here you have many dangerous machines. It cannot go on, Professor!"

"I will not stop!" Athlinstone retorted, thumping the bench by his side.

"If you are removed, you may *have* to!" the Intelligence countered icily.

"Come here!"

Athlinstone's Defiance of the Intelligence—The Collapse

INSTEAD of obeying, Athlinstone threw himself to the nearby brain machine and switched on the power. With a savage movement he flung the power lever into the highest notch, simultaneously throwing every vestige of his concentration into the amplifying mechanism.

"If you can stand against this, you devil, do so!" he shouted exultantly. "Come on!"

In the space of less than two minutes every member of the party began to collapse. Dr. Soone made a mighty struggle to combat the awful flow of power from the machine, but failing, he sank down unconscious upon the floor. Eri and the guards followed suit rapidly.

Only the Intelligence remained standing, his feet a little apart, his hands open at his sides. The queer eyes burned like fire once more, and down came the eyebrows into the sharp V. He took a step forward, jerkily and clumsily, as though with colossal effort. . . . Struggling mightily to hold his concentration on the mechanism, Athlinstone gave the machine all the power of which it was capable. Fear sought to seize him and upset his thoughts—fear! the element he had overlooked! He battled against it; trembled with the strain.

The Intelligence stood quite still for another long interval, his eyes staring directly into Athlinstone's. His face was wet with perspiration. The splendid forehead was furrowed with gigantic effort.

Another step . . . and another!

Fear! Athlinstone moaned inwardly. If only he had not been so weakened with worry; if only he had taken that one little, yet behemoth element into his calculations. Fear! It was to be his ruin—his end! Abruptly he relaxed with a sobbing curse. In an instant the Intelligence was upon him, and had switched off the power.

"Fool!" the monster breathed, as he bore the old scientist to the floor. "Now do you realize how hopeless it all is?"

He pulled something from his waist-belt and pointed it at the terror stricken scientist. A faint, vaporous blue curled upwards to the ceiling, and with it went the grand soul of Rupert Athlinstone. . . .

Slowly the Intelligence rose to his feet, looked down at the gently curled, lifeless man, and then replaced his deadly instrument in his waist-belt. Going over to Soone, Eri, and the guards, he shook them into sensibility. Within five minutes they were all on their feet, gazing at the dead Professor.

"We have nothing more to fear from him," said the inhuman voice. "We will leave at once and give the order for the immediate destruction of this place and all it contains. . . . It is as well that Athlinstone, in his overwrought condition, forgot to place the repulsive screen over the laboratory," he added, looking back. "Otherwise, it might have been quite a time!"

Quietly the party left the laboratory by way of the door. Half way across the moor two men were waiting with electrical blasting equipment.

"Proceed," the Intelligence ordered, and watched the distant spot where the laboratory was situated. In went the electric master-switch. A blue spark leaped the gaping enigma of machinery.

A mile and a half away a thick cloud of dust and debris shot skywards, to settle down into a thick haze which drifted slowly away on the southerly morning breeze.

The Intelligence nodded, turned about, and walked rhythmically back towards New London with his colleagues. . . .

CHAPTER X

Kal, of U-Kotar

FOR what must actually have been weeks, Dave and Nan were in a condition closely assimilated to heavy stupor, within the close confines of the test projectile. The stupendous rush outwards from their native planet, the infinite silence of interstellar space, the pressure against their bodies occasioned by the ever mounting accelleration of the vessel through the void—all these things had tended to dull their normal faculties.

Occasionally they ate sparingly, or crawled to the window to look out on the unthinkable blackness of space, upon which the stars were strewn promiscuously like diamonds on jet black velvet. For a while at least the incomputable immensities of emptiness held their minds. Each time they looked, it seemed, earth was smaller and smaller behind them, a globe of green and yellow—whilst Mars, glowing red in the firmament, swelled and expanded from pin-head proportions to a ball of sullen hues. . . .

Close upon three weeks after the departure from earth the projectile commenced to approach within close proximity to the planet. Dave, with a stupendous effort, threw off something of his terrible lethargy and held his mind down to the task of discovering how the brake-controls operated. It took him a full three hours to determine every detail, but by that time he was satisfied that he had mastered every intricacy.

Six hours later the projectile dropped safely to the surface of the planet, and at the impact the mysterious locks with which the Intelligence had equipped the vessel became free. Dave threw in the anchor-brake and went in to his wife.

"Well, old girl, we've landed," he announced cryptically. "We might as well be hung for sheep as for lambs, so let's arm ourselves and explore outside. I have little doubt that the air is breathable—we've pretty well proved that fact on earth. A bit attenuated, maybe, but still fit for our lungs. Just look through the window! Not an inspiring sight, eh?"

"No . . ." Nan muttered, gazing out upon a seemingly endless waste of red sand. Nowhere a tree, nowhere a sign of a habitation. Not a bird or animal. Just sand, and sand. . . . And above a steel blue sky, a flake of amazingly high cloud, and the reddish, copper sun.

Sand . . . Sand . . .

Nan shook her head. "Deathly—silent—still," she said in a low voice. "Dave, it's to be—our graveyard!"

Quietly Dave took her arm. "Don't meet trouble half way, Nan," he counselled quietly. "Come on—let's get going."

He handed her a loaded rifle from the wall, took one himself and then pushed back the clamps of the door. As it swung open an air possessing a curious dry dustiness swept into the chamber. For a moment its thinness stung the lungs, but lost its unpleasantness after five minutes or so of deep breathing.

"Ready?" Dave asked.

"And waiting."

Mars

HE jumped down through the manhole to the sand, forgetting for the moment the lesser gravity with which he had to cope. Instead of a dignified jump to the ground he spread out sideways and fell gently on his face amidst the grains. He was only just in time to wriggle aside before Nan made precisely the same mistake.

After a time they managed to gain their feet, and practice rapidly revealed to them the easiest way of moving against the lesser attraction.

"There's one thing this low gravity does," Dave commented, as they hopped along. "It gives us about three times as much strength, as we ever had on earth, if it becomes necessary to tackle any hostile beings."

Nan replied. "I'd sooner have the gravity to which I'm accustomed and leave my strength alone," she answered. "I can hardly walk without falling. It feels like—like having little balloons tucked in my clothing. I rise nearly six inches at every step."

Silence fell between them again as they progressed. They knew not where they were going, or why. Everywhere was the same—just the endless sand. Presently, however, there crept into the air a peculiar something —a sense of vast presences, yet invisible. The two stopped.

"You've noticed it, then?" Dave asked.

The girl nodded. "Yes—there's something near us; I can feel it. Something astoundingly powerful. . . . The air is dripping with—how shall I express it?—personality."

"You're right." Dave wrinkled his brow, pondering the queer effect; then at a slight sound he wheeled round, and Nan did likewise. What they beheld came as so violent a shock that they felt bereft of all speech and movement. They could do nothing but stare, fixedly and amazedly.

The Martian

PERHAPS five feet away a man was standing, apparently quite human in form, attired in robes of flowing white. A long white beard streamed down and mingled pleasantly with his snowy raiment. Masses of white hair streamed from either side of the wonderful head. An amazingly intelligent face, possessed of an expression of infinite compassion and wisdom, formed a perfect oval under the snow-white hair. It was a face that had impressed upon it countless years of knowledge and intelligence, balanced by a patience and purity beyond earthly understanding.

"Good Heaven!" Dave managed to get out at last. "Am I dreaming? Nan, it's a desert mirage—that's what it is. We're just both overwrought."

"What you see is real," said the apparition, in a voice of astounding depth and richness. It was a voice that had no terrestrial parallel, so extraordinary and bell-like were its notes.

Dave took a step forward, clutching Nan's hand. "Who—who are you?" he demanded.

The stranger smiled faintly in response. Dave stood looking at him, thinking what a splendid man he was—upright and tall, with tremendous breadth of chest beneath his glorious beard.

"I am Kal, of U-Kotar," came the bass reply. "You, my friend, are, of course, David Elton of the planet Keznar—or, as you term it, earth. . . ."

"But you speak English; you are a being like myself!" Dave expostulated. "I had expected— Well, anything but this!"

Kal smiled again, indulgently. "Naturally you are startled; very puzzled—but rest assured that everything will be made clear to you before long. You need explain nothing—I know it all. Nothing, my friends, can be beyond the reach of thought."

"Beyond the reach of—of thought?" Dave repeated mechanically.

"Exactly," Kal responded. "Nothing can be beyond the power of thought. For instance, were I to command one of your earthly rose bushes to bloom in this arid wilderness—amidst this seeming endlessness of sand, you would think me a charlatan, eh?"

Dave did not reply to that, and the old man's eyes twinkled. "Yet—look!" he said simply.

Dave turned, and an ejaculation was forced unbidden from his lips. A long gasp escaped Nan. Within two feet of them a rose bush was swaying gently in the soft wind—a stout, healthy bush, weighted with the magnificent flowers that depended from it. The thing was a miracle—a contradiction of all known laws. The ground was dry sand, bare and lifeless as rock a few moments before . . . yet now! Dave spun round on Kal, who was smiling in his whimsical way.

"How did you do that, sir? Are you hypnotizing us?"

Thought and Hypnotism

"HYPNOTISM is mental destruction," Kal responded sedately. "That bush is a manifestation of thought, which knows no barriers. Pick the roses, my son—and you too, daughter. Unlike your earthly roses, those will never die. Nothing on this world . . . dies."

Incredulous Dave and Nan stepped across to the bush and each plucked a rose. Another odd thing was the absence of thorns. A glorious perfume swept up to them as they fixed the roses in the flaps of their shirt pockets. No earthly rose on a summer evening could emit so sweet an odor as these magical creations of the Martian wilderness.

"So," Kal remarked pleasantly; then turning to the bush he just looked at it—nothing more. Yet instantly it vanished from sight and there was no trace of it in the place where it had been. Only two perfect blooms in two pocket flaps remained to testify to the miracle.

Dave and Nan commenced to wonder if they had died and this was the after life. A glance at their clothes and the distant, useless projectile destroyed the theory, however. No, Kal of U-Kotar was real enough. . . .

"Now, my friends, you will require food and drink, I observe. We of U-Kotar ceased indulging in the material practice of eating and drinking four hundred and seventy cycles ago. You, however, have not yet ascended to that level. Prepare yourselves, then, for the transportation to the City of U-Kotar, First Ruling City on the planet Eznar, City of Materialized Thought. . . . Prepare."

His voice seemed to fade away, and at the same moment the plain of sand faded also. Followed a deep purple glow, amorphous and undetailed—then gradually a city merged into view, a city of peculiarly transparent qualities, glittering oddly in the light of the sun. Dave looked about him and found Nan by his side. They were standing upon a ledge of rock high up on the edge of a mighty natural basin. Near by, Kal was standing, as majestic and unmoved as ever.

"That is the City of Materialized Thought, City of U-Kotar," he announced in his deep voice. "To you it looks like a city of transparence. Actually, it is not there at all! In U-Kotar, we *know* it is there, so to see it in material substance is quite unnecessary. However, now that you have viewed it from a distance, I will transport you to your chambers. Prepare."

In the space of what seemed a few seconds, Dave and Nan found themselves in an immense, delightfully cool room, windowless, but fitted with shutters on the Venetian-blind principle. To their amazement, everything in the way of furniture was perfectly earthlike. The room was almost a replica of a hotel dining room, magnified. Tables, chairs, divans, carpets. . . . Kal chuckled slightly at the dazed expressions on his charges' faces.

"I have purely created this room to suit your earthly requirements," he explained. "If any detail is missing, I will proceed to have it put in order. Now, here are food and drink, also earthly."

An Earthly Vision on Mars

UPON one of the tables appeared a perfectly-laid meal. A cold chicken, faultlessly cooked, lay upon a silver dish; a cold ham was there, likewise. The plates and cutlery glimmered brightly in the shaft of sunlight streaming through the window. Dave stepped forward, feeling very much akin to one who views the manifestations of a genie, and looked the meal over carefully. Nothing was missing. Even the condiments were there in silver containers.

"Sir, I do wish you would tell me how you do this sort of thing!" he exclaimed with entreaty. "To my wife and me it is akin to magic—the sort of thing that happens in our earthly fairy stories. How do you do it?"

"Everything that appears as a miracle to you, my friends, is purely the material manifestation of my thoughts," Kal answered sedately. "Long ago we learned that it is not necessary to do so much material labor in order to bring our thoughts into the practical thing. For instance, at home, you would cook that meal and then lay it on the table. You would know at the commencement that your ultimate task would be to lay the table and put out the meal—but in the interval you would go through so much material labor in order to put that trend of thought into practicality. Here, however, we cut out all material incidentals, and the result is instantaneous manifestation of thought. Everything is done because we *know* nothing else can obtain. As you progress in knowledge here, my children, you will follow better. For the time being, if there is anything you should desire, do not look for a bell; just think of my name, and I will come. Sleep after the meal if you desire it. You will find your rooms beyond this one—through that door. For the time being, then—farewell."

The Disappearance of Kal

KAL seemed to melt into the air itself and was gone.

"Well!" Dave gasped at last, laughing with relief. "What do you make of this lot, Nan? We thought the Intelligence was a wizard, but, compared to this old patriarch Kal, he's an infant-in-arms. . . ."

"Yes, I was just thinking that," Nan murmured thoughtfully. "And, Dave, do you know I have an odd feeling—call it feminine intuition if you will—that the Intelligence has brought about not *our* destruction by firing us to Mars—but his own! To a man like Kal—if man he be!—nothing is impossible. He could bring the strife and trouble on earth to an end in a second. Yes, we must put the proposition to him."

"Undoubtedly," Dave argeed, then he fell into thought for a moment. "You know, Nan, it's queer that he should be a human being, in form I mean, like you and me. According to mathematical computation, the chance of beings akin to us evolving on another world is almost ten million to one against it. Insect-like beings, worm-like creatures, even plant beings or intelligent gases, are all possible—but beings like ourselves unthinkably remote! Yet here we find a human being . . . unless," he said in a change of tone, "unless he appears as a human being to make himself fully comprehensible to us. Obviously he understands everything there is to understand—our language, our planet, all about us—everything. It all seems like a dream. . . ."

He paused, ruminated, and then laughed.

"Well, we'll leave it to take care of itself," he said with sudden abandon. "Come on and let's eat. After that our brains may be clear enough to sort out the tangle a little more easily."

CHAPTER XI

The Plans of Kal

WITH the passing days Kal appeared many times, always the same paradigm of beneficence, creating fresh wonders that startled the earthlings more and more each time, doing everything without moving from one spot, able to continue a conversation whilst issuing a dozen thought-orders simultaneously. Undoubtedly Kal was the consumate example of mind's unquestionable control over matter, a control as earthlings have hoped during generations to achieve.

Then came the day for the audience with Kal before the ruling council of the city. Dave and Nan were transported in the usual mysterious fashion, and found themselves finally in a vast hallway, surrounded by tier upon tier of learned, grave-faced men, all of whom possessed wonderful beards. Like serried rows of Druids they rose upwards to the magnificent roof—yet there was noticeably absent that air of criticism and searching eyes inseparable from a similar earthly gathering. Dave and Nan felt the atmosphere to be one of peace and content; it was like a draught of pure, cold water to a thirsty man.

Kal himself quietly advanced to a massive seat in the exact center of the room.

"Now, my friends," he said in his deep, even voice, "the time has come, when we are to understand each other to the full. Or perhaps I should say, when you are to understand *us* to the full. There is nothing about you or your planet we do not know. However, to come to the point. You remarked quite recently to your wife that repetition of beings like yourselves on any other world is a very remote chance. Quite correct. We beings, in reality, have no form at all. We are merely thoughts, invisible to lesser intelligence, but fully understandable to ourselves. For your edification, however, we have all agreed to assume human form like yourselves so that you may see and understand us. We all knew of your coming here long before you arrived, nor need you fear any hostility on this planet, my friends."

Kal paused for a moment, and then resumed.

"On your planet there is considerable strife and unrest owing to the activities of a being you created—the Intelligence, is there not?" he asked.

"Yes," Dave muttered. "When I got the idea for making an intelligent being I never thought I was sealing the doom of humanity. That monster plans to stop the growth of the human race and plans the making of a synthetic race of beings like himself."

"So I am aware," Kal nodded. "He will not, however, succeed in his efforts."

Dave took a step forward. "Sir, do you mean that?" he demanded tensely. "How do you know? I know you possess unlimited powers with your complete mastery over matter, but——"

"You have had proof of the attainments of the people of U-Kotar," Kal responded with dignity. "I have said that he—or it—the Intelligence, will not succeed. We of this planet are out to prevent it. We have seen many things you would not understand, and have devised many things you would not understand. Your earth is a sister planet to ours—she needs help, and needs it badly. We are an older race, millions of years older, and so millions of years older in knowledge. We alone can help, and are going to. It was we who put the idea into the mind of the Intelligence to send you two to Mars, as you call it. We thought it would be as well that you understand what is to happen. You have heard, perhaps, on the earth, that the sun is threatened with collapse?"

Dave nodded.

The Collapse of the Sun

"WE are causing that," said Kal calmly. "We have marshalled together irresistible cosmic forces and are deliberately wrecking the power of the sun—a task, which it will take three of your years to accomplish. It could be done instantaneously, but we prefer it otherwise. We have decided that your planet must be purged and swept of every manifestation of the Intelligence and his adherents. You must learn to begin all over again!"

"But in the collapse of the sun all the planets will suffer—this one included," Dave commented.

Kal smiled faintly. "There are some things you do not understand, my son," he said indulgently. "The other planets have been provided for by us. What life dwells on them is of such order as to be amply arranged for. No—your earth will be frozen out, will become a dimly lighted, ice-bound planet, incapable of holding life—for a time. In that time every element of evil, every trace and ramification of the Intelligence, will be wiped out of existence . . . Then will come a change—the sun will recover; and those same cosmic forces that destroyed the sun will bring another sun into being. Question not these forces; they are so mighty that even we cannot understand them to the full. Suffice it that nobody on the earth will suffer save those who deserve to. Our plans are such that the Intelligence will be powerless—how this will come about we alone know."

Kal paused and considered for a moment.

"It will be your duty, my children, to do as you are commanded by me. You are to trust solely to my judgment."

"Willingly," Dave said, and Nan nodded assent.

"Very well. I shall put you both back on the earth not by rockets or projectiles—but by the power of thought. During this transportation two and a half years shall pass by. There is no time in thought. You can be in the future as well as in the present, if you but understand it. Therefore, while you are in a state between worlds, so to speak, I will put my plans into operation. You will find yourselves on your own world again, but two and a half years will have passed by. All that you have to do is to entirely follow what seem the dictates of your judgment. Actually, it will be my judgment at work. No matter how dangerous your position may seem, do not fear, for I shall be with you. At the approach of the time for the solar eclipse you will find that the earth is honeycombed with underground refuges, and into these will be herded all the deserving peoples of the world. I will see that you have but little trouble doing this. I will be by your side, invisibly. After the cold, you will see the good that has been done, and will see a new earth, upon which you must all start anew, the better for experience. You understand?"

Farewell to Kindly Mars

"PERFECTLY," Dave nodded. "It is needless for me to add that I don't see how you're going to do all this."

"That is not your task," Kal returned. "If you are ready, my colleagues and I will commence your transportation back to the earth . . ."

"So soon!" Dave exclaimed.

"Why not?" Kal asked quietly.

"Oh—no reason at all. It just seemed sudden."

"You are limiting yourself to time, my son—a grave error. There is no such thing as time, therefore we bid you—farewell. And do not fear, for I shall be with you."

Dave and Nan caught a last glimpse of his wonderful old face and inscrutable eyes, then the deep violet enigma to which they were now accustomed closed in upon them, and they seemed to be buoyed upwards into an immense and limitless abyss . . .

CHAPTER XII

The Last of the Intelligence

"SO you say there is no further information from Mars?" Dr. Soone enquired of the Intelligence.

The monster aroused himself from a deep concentration and looked at the surgeon. An expression, the closest to anxiety Soone had ever seen on that emotionless visage, was upon the Intelligence's face.

"No," he answered tonelessly. "For a reason which my mind cannot fathom all communication between me and the man Elton and his wife has been cut off. I saw them land safely on Mars; I saw them walking across a desert of red sand—but now, just a blank! I cannot learn anything about them or the planet. I confess I am puzzled."

"But surely nothing is a puzzle to such a mind as yours?" Soone explained. "Perhaps—perhaps they are dead?"

"That would not hinder me viewing the planet," the Intelligence responded. "No, there is some force at work deliberately interfering with my attempts to connect with the planet.

"It may be—a mind greater than my own!" and the face set into hard lines.

Soone did not answer that question, for it had been put in such a tone as to preclude interrogation. Instead he said, "Since communication is impossible, and you know those two arrived on the planet, and cannot therefore get back, why bother at all? We have enough trouble of our own to contend with.

"Sanders gave me a report to-day on the solar business. It is quite true. The sun will collapse in three years' time.

"What are you going to do about it?"

The Approaching Collapse of the Sun—The Fate of Humanity

"I HAVE already answered that question, Soone. We—that is, myself, you, Eri, and a group of experts on synthetic men—will wait until the disaster is about to happen. Then we will make for the void which lies beyond our own solar system, find a suitable planet, and finally commence to create a race akin to myself—intellectual giants."

"And leave the human race to destruction?" Soone asked.

"There is no other way. The lesser must ever fall before the greater. To tell them of our plans would endanger our chances—to tell them of the solar disaster, that is to come, would make an immediate demand for shelters of some kind. No, the best way is a secret departure, when it is too late for them to realize the danger. I have had reports circulated to the effect that any rumors of solar disturbance are to be ignored as pure gossip."

Soone shrugged. "Well, you know best," he said indifferently. "After all, I'm not particularly concerned in what happens to them. I have given instructions to the projectile works to have a very large projectile complete with all controls made as soon as possible," the Intelligence continued. "So soon as that is done I shall have the ship put in a secure place, where it cannot be tampered with—in readiness for instant departure. And, so soon as that ship is built, I personally shall destroy the plans so that no other machine can be built and pursue us."

"Who is in charge of the plans?" Soone enquired.

"Eri. They could not be in safer hands," the Intelligence replied.

"I agree with you there. I just thought how fatal it would be for us, if the news or plans got to other ears."

"No news will leak out," the Intelligence responded. "The plans I lay are always perfect . . ."

The Slow Days That Passed

AND so the days passed on—days which lengthened into months, and months into years. The steady, organized precision of New London went on apace. Hints and vague suggestions of impending solar disaster had reached the workers, despite the belief of the Intelligence that every avenue of information had been effectively closed up. The workers paid but little heed, however. One or two thought about it, but did not act. Everybody was content, believing that the information was false. The Intelligence himself was at his post, and he surely would be the first to remark if anything untoward were threatened . . .

The workers only began to wonder if there was anything behind it all, when terrific electrical storms began to sweep the earth from end to end, the overture to the eventual collapse of the seriously unstable sun. Yet what danger could there be? Again came the thought—the Intelligence himself was at his post.

On the night of March 16th, 1944, the Intelligence called Soone, Eri, and six picked men into his chambers.

"My friends," he said, "six weeks will see the collapse of the sun. Already indeed the first titanic storms preceding the actual collapse are ravaging the earth. It is no longer safe to stay. I will not waste time on words. Come with me, to where the private underground workshop is situated."

"Why?" asked Eri.

"To enter the projectile of course," the Intelligence responded. "What else did you think?"

Eri smiled slyly. "A good plan, Intelligence," he commented, "but not quite good enough. What are you going to say when I tell you that I have had a dummy ship built and destroyed all the plans?"

"You . . . what?" Soone gasped incredulously.

Eri smiled again, venomously. "So you thought I'd follow out your orders to the last, eh, Intelligence? You inhuman swine! Do you think I forget the way you've treated me all through the years? Do you think I'm afraid to turn the tables on you? Not I! I've got you into a jam from which you can't get out—and, above all, it was I who spread the rumors among the people, and they want—*you!*"

Eri a Traitor

"YOU traitor!" the Intelligence snarled. "You traitor! You know the penalty for this?"

"I don't mind," Eri returned languidly. "Kill me if you want. I shall die in any case soon, so it might as well be now. I've yearned for years to be revenged upon you, and now I've done it! So you can go to hell, and——" He ceased to speak. He crumpled up gently and silently before the death ray instrument of the Intelligence.

"Now to the workshop!" the Intelligence commanded in a voice of steel. "If Eri spoke the truth, we are trapped. There is a chance it was bluff. Come!"

They filed out hastily, but at the door of the underground workshop they were met by two men armed with paralysers.

"What is this?" the Intelligence demanded. "I gave no permission for you to stand here. Out of the way!"

"Just a moment!" commanded the foremost man. "Take a good look at me, Intelligence—you too, Dr. Soone. Who am I?"

Soone stared and then jumped back as though he had been struck. "My God, David Elton!" he gasped out huskily.

"A bid of a surprise, eh?" Dave asked pleasantly. "Just try and think out how I have come back from Mars. This 'man' here is Nan, my wife. It may interest you to know that Eri made a dummy vessel, not by the dictates of his own mind, but by the dictates of the master-mind which transported my wife and me across space back to this planet. Intelligence, you have met your master in a being known as Kal of U-Kotar, and——"

He stopped short as the Intelligence whipped out his death ray. The button shot into position and Dave waited stoically for the end he was not to find. For some strange reason nothing happened. With a face of iron the Intelligence examined the control and then flung the instrument to the floor.

"Jammed!" he said in an icy voice. "Men, seize these two and have them put in prison . . ."

The Intelligence Begins to Fail

THE men hesitated; the paralyzers were levelled at them.

"So the paralyzers scare you?" the Intelligence asked them. "I will do it myself, then," and he threw himself into a spell of enormous concentration. As time passed, however, and his mental powers seemed completely without effect, he came as near to impatience as his unemotional body could do.

"Get out of my way! Time is precious!"

"I've no objection," Dave answered, "but you know your space machine is useless. And the workers are looking for you, too! You're cornered, and you may as well realize it! So what are you going to do?"

Before Dave could grasp what was happening, the Intelligence and Dr. Soone had both turned on their heels and were fleeing down the passage-way as fast as their legs could carry them.

"Why the devil don't you put us in the fourth dimension?" Soone panted desperately, as he tore alongside his superior.

"I cannot! I cannot!" the Intelligence muttered. "Something has happened somewhere. My mental powers seem useless. Make for the machine-room . . . we'll turn a brain machine on this rabble."

Behind them, Dave, Nan, and the guards followed like the wind, up passages, clambering up stairways, through rooms, down aisles, between machines, and at last into the great machine room, the nerve centre of New London.

Failure of the Intelligence's Machines

PANTING hard, the Intelligence jumped to his brain machine, Soone by his side. He flung over the power lever breathlessly.

Not a sound. The machine refused to operate . . .

"For God's sake!" Soone panted hoarsely. "Turn it on! The whole lot of them will be on us in a minute!"

"The mechanism's jammed!" the Intelligence returned savagely. "My machinery seems to be all out of order. Good God, Soone, I do believe I'm sinking down to the level of an ordinary human being. I have human emotions coming over me—fear, hate—I have lost my former enormous mental range. I can think no higher than you can. Listen! I've become an ordinary man!"

"It's a fact!" Soone breathed in awe, looking dazedly at the now wild and furious Intelligence. "You're like us—you are a human being—no longer synthetic . . . They're coming! Quick! Up to the roof out of the way."

At full speed they rushed along the aisle and commenced the ascent of the refractor telescope.

At that moment a babbling roar commenced to fill the edifice. Voices shouted in furious anger, resonant thumps, and the thunder of running feet. At the same moment a sea of dark blue figures surged into the immense machine room, bawling at the top of their voices.

"The workers!" the Intelligence panted. "Get on, Soone—quick—or we're done!"

Soone turned to continue, then to his astonishment an iron grip seized his shoulder. He was amazed to find that the Intelligence was gripping him, a wild light suddenly flaming in his strange eyes.

"Listen, Soone!" rasped that metallic voice; "you were the man who made my brain, who moulded me—and it is you also who are responsible for my inevitable destruction! Somewhere you made an error; you made my brain capable of collapse under extreme strain. Every movement I become less intelligent—I am sinking through the scale of de-evolution, back to the primitive . . . am descending to the beast. But, by Heaven, if I am sinking, you shall go too!"

"Have you gone mad?" the surgeon panted, fighting to free himself.

"It seemed possible that the Intelligence had indeed relapsed into insanity. The mighty mind was no longer the slave; it was the master. The Intelligence was no more; he was naught but a fighting, screaming savage, blind to all sense of reason; a struggling maniac amidst the ruins of a shattered mind . . .

Soone fought mightily against the ruthless arms that held him. He punched, and wrestled, and kicked. All to no avail. The intelligence was as mighty in apelike strength as he had been in mind. Soone screamed hoarsely as he slipped over the edge of the girder upon which he was standing and hung for a moment in midair.

"Pull me up! Pull me up!" he shouted desperately.

The Intelligence returned the plea with a snarling grunt.

Soone sank lower and lower, then quite suddenly the Intelligence overbalanced and he and Soone toppled through the air—a sheer hundred foot drop.

The End of the Intelligence and of Soone

ON the ground floor Dave and Nan, surrounded by the fascinated workers, saw the two forms hurtle downwards straight on to the gleaming copper wound cylinders of electrical generators . . . At that moment of impact there came a dazzling blue flash and a sharp hissing noise. An immense short circuit passed throughout the entire mass of machinery, and it whined to a standstill.

It seemed like a silence promoted in gratitude to the passing of a giant intelligence and its creator.

Upon one of the giant cylinders lay two piles of grey dust, which stirred in the gentle breeze through the open doors . . .

CHAPTER XIII

After the Earth Froze

WITH the passing of the weeks, and the iron control of the Intelligence at last removed, the workers looked pitifully for guidance in their hour of need, and Dave came into his own. Aided by a quartet of highly intellectual men, late enforced minions of the Intelligence, he succeeded in getting the entire army of workers into a semblance of order, put them into divisions, and knew, by the end of a month, exactly where each division was situated.

It was at the time he had succeeded in arranging all these divisions, that the earth was suddenly found to be a mass of underground shelters, carefully stocked with food, water, and artificial air—enough to last for months. Kal had kept his word. What the workers thought of this miracle was never discovered, for the approach of the solar collapse was too imminent to permit investigation.

The people obeyed orders without question, and within a week every man, woman, and child had vanished from the face of the earth, were living, deep underground, in perfect comfort, yet able to view the outside world through snub-nosed towers of unbreakable glass.

Dave and Nan, accompanied by the intellectuals, had a special underground residence to themselves, completely equipped with instruments.

Three days before the actual collapse the first evidences of something amiss became apparent on the earth. Thunderstorms of incredible violence swept the planet from end to end.

The Catastrophe at Last

BEING within clear view of New London, from that high point once known as Parliament Hill, Dave and Nan watched in awe the gradual collapse of that mighty city. Tower after tower vanished in vast crumblings of masonry and steel as the blue-white bolts stabbed down from the inky clouds. Rain descended in torrents, pouring off the glass tower of the residence in rivulets, forming into pools in the dusty soil . . . Then, just as suddenly as they came, the storms would diminish and allow the sun to shine forth—an angry, red-looking sun, inflamed and sinister . . .

On the third day, at 2:14 p. m., according to Dave's chronometer, the disaster came. At that moment the last electron was wrested from the outer shell, and the disrupted atoms could no longer hold the weight of the sun. What happened could not be seen owing to the dense clouds that had gathered, but everybody became aware of an encroaching dullness that deepened into twilight, until the afternoon was as cheerless and gloomy as one hour before dawn.

The exterior thermometers registered two degrees drop in twenty minutes. Dave and Nan, with the intellectuals, sat watching the proceedings, calculating and checking notes. Whatever the cosmic forces were that Kal had brought to bear they had certainly achieved their object. Somewhere behind all the clouds a weakly glimmering sun must be shining—but bereft of all its normal warmth.

Storms, Whirlwinds, Tidal Waves and Upheavals

THEN came storms—terrifying, fearful storms. Angry and deadly uprisings of Nature that flogged the earth unmercifully. The vast alteration in the sun's behaviour brought about such colossal upheavals as would have been deemed impossible. Whirlwinds and tidal waves swept and flooded the earth with a fury that knew no bounds. The sea, lashed to a savagery, which had no parallel in earth's history, crashed inwards on the land, wiping out villages, flooding and ruining cities, sweeping away entire cliffs, and roaring as a colossal ruinous monster of destruction over the wind and rain-lashed landscape.

The Thames, from the viewpoint of Dave and Nan, changed from a flooded ribbon of dull grey to a sudden mighty lake at the uprush of the sea from its mouth. Triumphant the waves rolled on, carving New London in two as though with a vast knife. The rain, also, formed itself into rolling rivers and tumbled down in frothing cascades to meet the swirling sea in the valley below.

Chaos, supreme and irresistible.

Then, with the passage of the hours, the fury of the electrical disturbances abated somewhat—and finally ceased altogether. The earth became enshrouded with a deathly calmness for a space . . .

Outside lay an inconceivable scene of havoc and destruction. New London was nothing but a tottering ruin, entirely awash. The sea, fortunately—or was it something more than fortune?—had confined itself to the valley below, isolating the southernmost parts of England—turning them into an island upon which no being lived or moved.

Towards evening a glimpse of the sun was obtained.

It lay low down on the horizon, oddly distorted by atmospheric irregularities—a ghost of a sun, pale and wan, with not a trace of heat. Its light was more powerful than that of the moon, but its heat-giving qualities were entirely absent . . .

It set at last, sinking, as it seemed, into the now subsiding sea.

With the coming of darkness the thermometer commenced the downward fall in earnest. It dropped to the freezing point an hour after sunset, and down to zero three hours afterwards. A wind sprang up about this time, a wind that brought with it a blizzard of unprecedented force. Peering through the gaps in the glass, which had escaped frost spangles, Dave could see naught but a white and glassy waste outside, and a writhing, seething chaos of white flakes. He hardly needed to guess that the clouds had condensed with the cold . . .

The Disappearance of Daylight

WHAT took place after the coming of the great blizzard nobody could say. Day after day passed without any visible sign of daylight. It seemed as though the sun had gone altogether. The mercury of the thermometer had dropped so low that it had disappeared entirely from the tube. Outside there was only the moaning of the ice-charged wind, and a dim, roaring sound, that spoke of perpetual destruction going on in the deserted, ice-bound world beyond . . .

Days passed into weeks, and still there was no sign of daylight. The people underground waited and waited, patiently—all view of the outside world blotted out. They lived comfortably, contentedly, unaware where it was all going to end, content to lead their lives in the brilliantly lighted underworld with their friends and families . . .

To Dave, however, leader of them all, the situation began to present grave fears.

"I can't understand it!" he muttered. "The earth is frozen from end to end by this time—there can't be a spark of life left in it; and we know that during the disasters in this darkness vast transformations must have taken place . . . But why doesn't Kal keep his word, I wonder?"

"He will keep his word," Nan murmured. "Don't worry, Dave—it'll all come right. And—— Look! What's that!"

She clutched his arm and pointed through the one tiny clear gap in the glass. Dave stared and began to breathe hard.

Far away to the east lay a band of pale grey, caressing the horizon. It widened slowly and changed color by imperceptible degrees . . . Grey—then muddy cream—then pure white . . . and at last, blue.

The Blue Sky at Last

"BLUE!" Dave shouted huskily. "Blue sky! Look!"

Gradually the blueness spread outwards and upwards, expanded into an ever widening gulf, until the blackness overhead seemed like a mountain range in silhouette against it.

The earth beneath shone silvery white as the blueness spread. Everywhere lay ice and snow—a fairyland of glittering, coruscating pendants . . . Came a beam of light at last; yellow light, powerful and warm.

Dave shot a glance upwards.

"A sun!" he threw out excitedly. "Not our sun, but a smaller one—just as hot and powerful, though! We've won, boys! Kal has kept his word . . ."

Yet withal, it was many days before the temperature rose far enough to permit of outside exploration. So soon as it was safe to venture Dave gave the order for temporary evacuation in order to examine the situation.

And what a situation it was!

Not a stick or stone was left standing. Everywhere was just a chaos of collapsed edifices and shattered, unrecognizable landscape. The snow, rapidly melting, had caused world-wide floods, and altered the entire topography of the globe. No land was as before. No land had a building standing. In one mighty effort Nature had obliterated everything man has cherished and possessed. New London was but a memory, far under the new coast line—all manifestations of the Intelligence, his wonderful cities, his marvellous creative forces, had been wiped out of all comprehension or knowledge . . .

Dave shook his head slowly as he looked down at the sea where New London had been.

"Well, perhaps it is as well," he murmured. "We've cleaned up everything, and the world can—start again."

Rebuilding the World

THANKS to the organized system to which the amalgamated races of the world worked, the task of building up new cities and charting new countries was not so gargantuan as had at first been expected.

Even so, five long years passed before the signs of really appreciable order arrived—years in which Dave and Nan toiled almost unceasingly to help and instruct the people, and years in which the collapse of the old-time sun was forgotten and done with.

Within ten years the world was practically back in a normal position—at least far enough forward for Dave and Nan—acclaimed, without question, Joint Presidents of World Reform—to take their well-earned holiday, whilst trusted advisers continued their activities . . .

For their holiday they chose the countryside, green and fresh with the glory of early summer, the rays of the new-born sun slanting down, hot and life-giving, between the trees.

"Well, Nan, we've had a packed life," Dave murmured, idly throwing a stone into the river at his feet. "And to think it could all have been stopped if I'd listened to you!"

"We learn by experience, Dave," Nan murmured; then she gave a laugh. "But think of the wonderful things we have seen—and done! These roses, for instance. Oven ten years old, and they smell as fresh and sweet as the day when Kal made them appear. I shall carry mine to my dying day."

"And I too, dear girl," Dave smiled, looking up at her.

"It is well," commented a profound voice.

The two looked around, up the bank, startled—then they gasped with amazement as they beheld none other than Kal himself coming slowly down the bank towards them, attired in his customary costume of white and gold, and seeming not a day older.

"Kal!" Dave ejaculated at last. "By Jove, sir, but I'm glad to see you again. Your words proved correct."

"Naturally," the old Martian returned pleasantly. "I have merely come to bid you a last farewell. You have done well, my children—you have seen for yourself that only experience can teach a necessary lesson. Don't interfere with Nature again, son—that is my advice; the advice of a mind millions of years ahead of you. Watch that, and you have nothing to fear. May you have contentment now until the end of your days . . . Farewell—forever."

"But——" Dave began; then he stopped as the vision of Kal faded slowly from sight. He looked back at Nan, perplexedly.

She smiled at his expression. "Why worry, Dave? You do not pretend to understand Kal's powers, do you? He is right—experience is the only teacher."

"Yes." Dave threw another stone and looked back at the girl, the sun shimmering in her fair hair, "Yes! Man is God-given, God-made, and God-sustained . . ."

The girl's grey eyes looked back at him, then she sank her chin on her hand and looked pensively away across the river.

"Yes, Dave, you're right. Nature is self-sufficient. I have you, and you have me . . . so all's well with the world!"

And as if in confirmation, a bird took up a thread of silver song in the tree above her . . .

THE END

Unto Us a Child Is Born

(*Continued from Page* 301)

be hard to understand. He had been so busy improving the standard of kitchen equipment that he had given but little time to other matters. Still holding the letter in his hand he went over to the central table and opened the baby book. He looked at the first few pictures and then could not see very well because of the film over his eyes.

Closing the book he went over to the wall wireless and tapped out a letter in reply, addressed to the Child Permit Department. One sentence was the answer, one sentence and the name, and the message read,

WE WILL NOT HAVE ANY MORE CHILDREN.
JACOB HUBLER.

He walked as quietly as he could to his wife's bedroom door.

Her room was dark and he could hear her sobbing in the darkness.

He went in and touched her hair.

Wanting to comfort her, he did not know what to say. The world was no longer "all before them."
(MILTON.)

THE END

Hibernation

(*Continued from Page* 315)

told all too clearly of what had occurred. A hastily written note lay nearby. Anderson read its brief contents:

"The old order changeth—. There is no place for an old man in a new world. I have lived my life. I could not endure the mental suffering of mere toleration under a new regime. It is better this way.
Antony Marsden."

Anderson closed the door as he left the office. Despite the inhuman apathy of the man, he felt a tinge of sympathy for the individual who had once befriended him.

He shook his shoulders as if throwing off the cloak of commiseration. But there were other more important considerations of the moment.

He hurried to the apartment. She would surely come here. He would wait . . . He withdrew a key from his pocket and slowly opened the door.

A girl stood before him . . . beautiful . . . radiant . . .

"Alicia!" he cried. "You have come back to be . . ." Impulsively he swept her into his arms.

"Gordon," she sobbed, "Gordon, my own. You kept faith . . . I love you so!"

"Fate has been kind, Alicia darling," he whispered. "It held me for years . . . to be able to hold you in my arms!"

THE END

Cavern of Thunders

By Harl Vincent

Author of "When the Comet Returned," "Faster Than Light," etc.

OUR author, who has won high appreciation by his interplanetary stories, in this narration not only comes down to earth, but goes under it. His characters are in the great galleries which are supposed to lie under the terrestrial crust, and their adventures and narrow escapes fill up the pages until the end is reached with an unexpected climax. The action of earthquakes enter into the story and we are in a sense reminded of the cosmic disturbances of a few weeks ago in California.

Illustrated by MOREY

CHAPTER I

Strange Bonds

FROM his perch on the ledge of rock, Ivarg looked out over the city of Raoz. Beside him tumbled the luminous waters of the Cascade of Light, waters that whipped into gleaming spray far below and then spread, fanwise, to lose themselves among the crevasses and boulders of the gray slope. Above the city, and almost on the level of his eyes, were the eleven huge spheres of blue-white radiance, the perpetually shining artificial suns of Raoz. Overhead was the black obscurity of the enormous vaulted cavern.

Seated there in troubled thought, Ivarg was a figure that would have delighted the eye of a sculptor of the ancient surface world. Unlike the puny womanish men of Raoz, he was of stalwart physique and stern visage. A mane of yellow hair crowned his head, and the wide-set blue eyes of him peered out from beneath bushy brows of the same hue. His arms and chest were bare, showing ridges of well-laid muscle, that rippled beneath the velvet smoothness of his pink skin.

Grim lines came into his face with the compressing of his lips as the ledge vibrated to an ominous rumble that came from the very bowels of the earth. A warning of the disaster to come. Rather it was a substantiation of that forecast Ivarg had brought to the councilors of Raoz a half-year before. A warning they had been slow to heed.

Ivarg's Foreboding of Disaster

FOR many hours the young engineer from the upper passages had sat thus communing with his thoughts. And bitter thoughts they were in the main. He had come to Raoz as spokesman of a deputation sent from the Bureau of Science. For this city of vegetarians, lowermost of the dwelling places of the inside world, was doomed to destruction by an unavoidable natural upheaval. It had been so determined by readings of the delicate instruments in the Bureau laboratory. But the Council of Raoz had stubbornly refused to believe.

The isolation of Raoz from the cities and peoples of the upper levels had been almost complete for many generations. Religious adherence to the diet adopted by their forebears, and ages of regression under a changed environment, had made an alien race of the people of Raoz—a race sufficient unto itself and contemptuous of those who dwelt above.

Failing in the effort to convince the councilors that Raoz must be abandoned and a new home established in one of the higher caverns, Ivarg's companions had left in disgust. But Ivarg had remained, for a new and incomprehensible emotion had arisen within him. Aona, the daughter of Voyos, fairest maiden in all Raoz, had captured his heart. And Aona, true to the traditions of her kind and prevailed upon by her aged father, had refused to leave her home.

That the girl reciprocated his feeling Ivarg was sure. But to him she yet remained aloof, an unfathomable mystery. Had he been at all superstitious, he might have thought her a beautiful creature of the spirit world. At times, though seated at his side, she appeared to have withdrawn, spiritually, to a realm far distant and of which Ivarg was no part. And, during the several waking periods of the past, she had kept to her rooms, refusing to see him. A mysterious person she was when in these moods, but altogether delectable and alluring when her normal self.

A Warning Temblor—An Earthquake Foreboded

A STEELY glitter deepened the blue of Ivarg's eyes as his thoughts were interrupted by a new and more violent jarring of the ledge beneath him. The entire cavern wall was in motion, protesting noisily. With a growled oath of determination he leaped to his feet. He knew that he must act and that quickly.

Swinging his long body over the edge of the projection, he dropped to the rocky slope and scrambled rapidly from boulder to boulder as he made his way down toward the city. Aona and Voyos must depart with him at once, whether they willed it or otherwise.

Scarcely two thirds the distance had been covered when the temblor increased in violence. Loosened stones and soil rained down upon him. Once, swept from his feet by the sliding and bouncing fragments, Ivarg was borne over the edge of a newly opened fissure where he dangled precariously for a horrible instant. It was only by the great strength of his arms that he was enabled to raise himself to safety, and he lay there a moment panting as a fresh rain of shale clattered down from above. Bruised and cut by the flying stones, he staggered to his feet once more and stumbled on down the grade.

And then, with a deafening roar, the Cascade of Light flung out from its normal course. It no longer fell in a nearly vertical stream as was its wont, but gushing forth with such force that it arched high above him and fell far out from the slope, a shimmering torrent which was carried to the outskirts of the city by some tremendous pressure newly released at its source. And now great clouds of steam billowed upward from a yawning chasm which had opened over the ledge up there.

A Dangerous Descent to the Lower Level

SLIDING, rolling, hardly ever regaining his footing, clutching desperately at jagged outcroppings, Ivarg came at length to level ground. Shouting, he ran for the city.

Indescribable confusion had descended upon Raoz when Ivarg reached it. The side streets were jammed with hysterical, milling humanity. In Central Avenue, which bisected the city, the moving ways were scenes of the wildest disorder as men and women fought to reach the express belts. Children, torn from their parents' sides in the mad scramble, were trampled under foot. In belated fear of their lives, the populace was fleeing toward the passages which led to the gravity shafts. The groaning of earth's vitals and the booming crashes of falling masonry at each new quake drowned out the cries of the fugitives.

Elbowing his way through the press, Ivarg hastened from one moving belt to another until he reached the opposite side of the Avenue. Before him loomed the crystal front of the octagonal building which housed the apartments of Aona and her father.

Here the crowds were moving sluggishly and Ivarg saw that an orator was endeavoring to address them from a position he had taken at the portal. It was Voyos. His bald pate glistened with perspiration under the steady glare of the eleven suns. And his shrill voice rose in fanatical exhortation above the clamor.

"We must remain," he was shrieking, "even though it be to die. It was thus decreed by the noble founders of Raoz. By Cathor and Sur, by Wills and Anson. We can not break faith with these—"

Ivarg waited to hear no more. Roughly flinging aside those who blocked his path, he forced his way to the side of the aged councilor.

"Voyos!" he gritted, clamping the withered arm in huge fingers, "Where is she? Where is Aona?"

Where Is Aona?—The Sacrifice of the People Called for by Her Father

BUT Voyos paid him no attention. His parchment-like skin was drawn tight over the white cheek bones; his browless black eyes were agleam with the madness that possessed him. His cracked voice was raised anew.

"Cowards!" he shrilled, "That Voyos should live to see his people flee like yelping curs! Back, I say, back to your homes ere the God of your forefathers cut you off. Back, ye renegades!"

"Bah!" a voice retorted from out the crowd, "If we hadn't listened to you and your kind we'd all be safely out of this now. Stay if you want to, old fool—we go."

The crowd howled its approval and the press eased as men and women dashed off to the moving ways.

"Apostates!" screeched Voyos, "White-livered—"

His tirade was terminated by the thud and scream of a dart from a needle gun. It struck him full in the breast, driving in deeply as it sang its dread treble of vibratory dissolution.

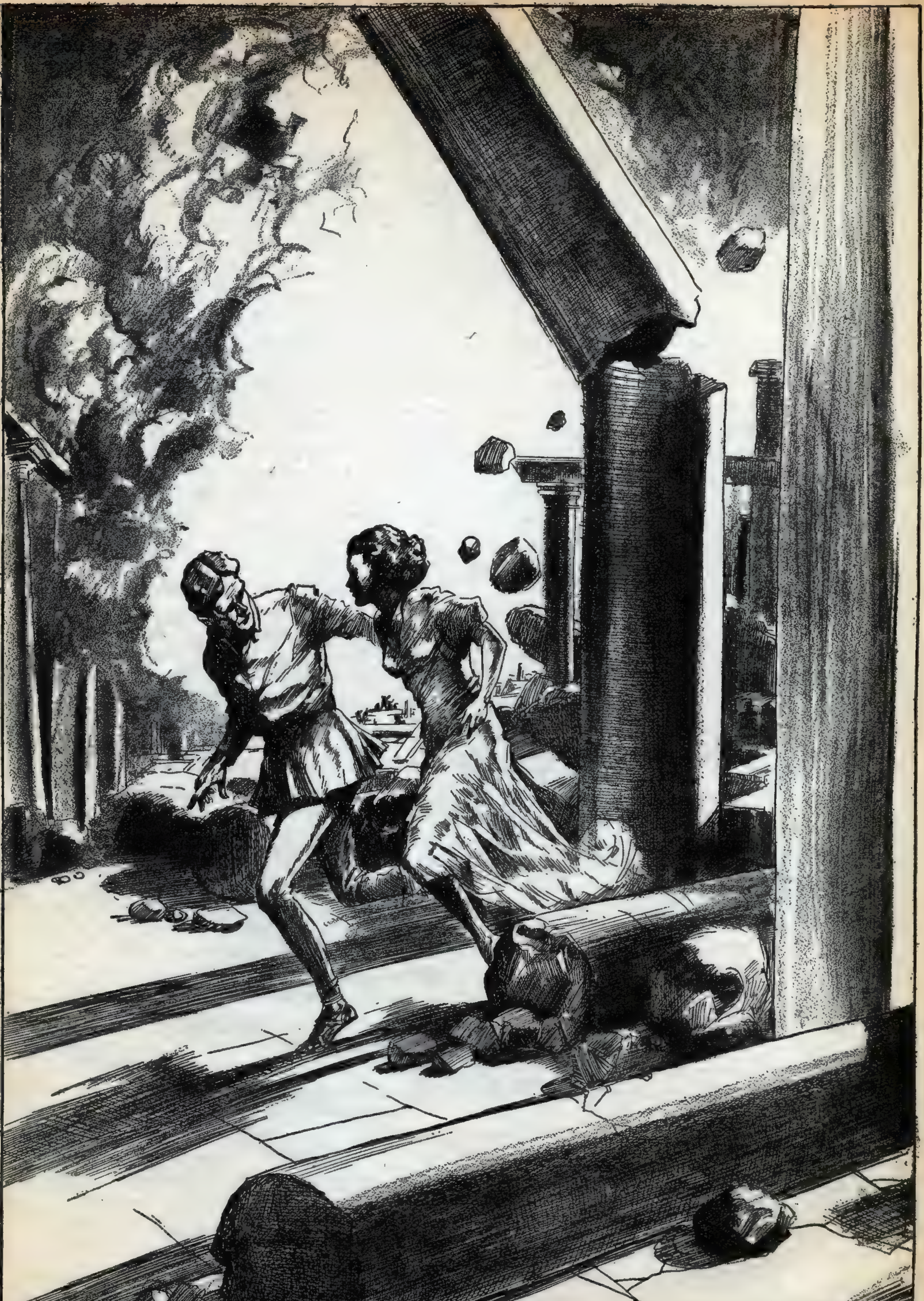
But Ivarg had seen the hand that held the needle gun. As swiftly as the forked tongue of a serpent his right arm darted forth. His mighty grip closed down on that wrist before Voyos had slumped into the shapeless mass that would presently vanish in complete disintegration. And he drew a screaming, struggling creature from the crowd. Inexorably his grip tightened and the wrist snapped like a pipestem, the needle gun clattering to the pavement. Then the assassin was in his great arms, kicking and biting, and whimpering as the arms closed in around him. The crowd disappeared as if by magic.

Ivarg's eyes misted as he looked down upon the shriveling thing that had been Voyos. Though he had not agreed with the older man in all things, he had come to revere him. And he had been the beloved sire of Aona. The murderer shrieked in horrible fear as his ribs gave way under the pressure of those encircling arms.

Then Ivarg had flung him away, a broken and bleeding corpse, and was sprinting past the portals.

Vandal Robbers in Voyos' Home

HE found the metal door of Voyos' apartments open and the foyer in confused disorder. Plunging through the heavy drapes into the drawing room,



And thus it was that Aona, thinking only of her quest, was set adrift in the midst of the great calamity with her companion, a man who had only evil in his heart.

he fell back in dismay at the sight which greeted him. The place had been ransacked. Rich furnishings, Voyos had so prized, were soiled and mutilated by the rough tactics of vandals who had delayed their flight for a long enough time to search out such valuables as might be easily carried. Drawers had been broken open and papers were strewn over the floor. The fragments of a huge vase cluttered the rug and had been ground into the polished floor by heavy heels.

In sudden panic, Ivarg rushed through the empty rooms.

"Aona! Aona!" he called out frantically.

Only the muffled din of the city came to his ears.

At the door of the girl's own suite he paused. There was the sound of a choking sob from within. A voice—Aona's—crying out in anguish. "Floa—oh, my sister!" And then a soft thud as if she had fallen.

Ivarg twisted frantically at the knob. The door was locked from inside. He beat upon the unyielding metal of the panels without eliciting any response. Then, drawing back a few paces, he charged the door with the full weight of him behind his massive shoulder. Again and again he used his body as a battering ram until the lock gave and he catapulted into the room.

Aona lay there a pitiful crumpled heap at the foot of her bed. There was no one else in the room. Quickly satisfying himself that she had only swooned, Ivarg lifted her tenderly in his arms and stretched the slim body on the silken counterpane. Deeply concerned, he stood regarding her as he chafed her wrists.

Though the men of Raoz had scraggly, colorless hair and very little of that, this was not true of the women. It had been Aona's glorious flaming crown that first attracted Ivarg. Now the shimmering tresses fell about the marble-white oval of her face in bewitching disarray, caressing the smooth contours of neck and shoulders with touch as soft as down. Long dark lashes lay on her cheeks, and the scarlet lips were slightly parted—trembling.

Fear clutched at Ivarg's heart. Aona's mind must have wandered. She *had* no sister; Voyos had told him she was his only child. And those queer withdrawals of herself had boded no good.

She sighed and her soft fingers twined with his. The great eyes opened—calm gray eyes with the light of reason and of love in them as they looked up at him. Ivarg grinned his relief.

"Oh," she whispered weakly, "I'm so glad you're here."

Color returned to her cheeks and she sat up suddenly, looking around fearfully. "Voyos—my father. Where is he?"

Ivarg told her gently. The round eyes dimmed with tears for a moment, then cleared resignedly. A cloud seemed to have lifted.

"Poor father," she whispered, "But truly, Ivarg, it is better so. He was so unhappy. And now I am free to tell you."

"Tell me!"—blankly.

The Story of Voyos' Secret

"YES," Aona went on breathlessly, "Of myself; of my sister Floa. Father refused to acknowledge her after she had left Raoz for the cities above. He forbade me to mention her name. But I loved her; I love her now more than my life. We were twins; our bodies were joined at birth. Clever surgeons were able to sever the physical, bodily bond. But never the bonds of mind and heart. Though we are many miles apart, each knows when the other suffers or is in danger. Were either of us to die, the other would know instantly, even as to the manner of death."

"So that is the reason you—" A light of comprehension was dawning on Ivarg.

"Yes. Floa has been in great danger during the past few days. I have kept to myself in my misery and to spare my poor father. But now that the danger is past and father has—gone—I am ready to leave. With you, my Ivarg. I must find my sister."

The floor beneath their feet heaved violently and there was the crash of débris falling in the street outside. Aona paled anew.

"You *must* leave—it is the calamity we predicted," Ivarg explained swiftly, "No time is to be lost if we are to escape. Come, my dear."

He swept her up and rushed from the apartment with his precious burden. Soft white arms encircled his neck and the fragrance of her hair was in his nostrils. The tile wall of the corridor was buckling as he ran toward the automatic lift.

CHAPTER II

Flight

MAN'S existence on earth has ever been a struggle. Nature, his friend, has proved a capricious one on many occasions, and has contrived his downfall and near extinction several times since the dawn of life on the surface world. Early man survived the glacial periods and inundations; always a few of his representatives remained to lay the foundations of a new race and a new civilization. And each such era has been marked by a new determination and a new progress.

It was so in the days of despair that came in the twenty-eighth century of the Christian era. Man had developed the resources of the earth's outer crust to the utmost; his progress in the sciences was superb; he had reached a state of universal peace and prosperity—a trifle complacent, perhaps, and decadent physically on account of his life of luxury and ease. But he was happier and less restless than he had been since the first recordings of history. Then came the Smothering Horror.

The solar system, in its hurried passage through space, encountered a vast cosmic cloud—a thick blanket of microscopic particles that caused the sun to shine a sickly green in the heavens and poisoned the earth's atmosphere. Much of its oxygen content was neutralized and the pressure lowered greatly. Vegetation withered and died. Mankind was doomed to a horrible end by strangulation. With all earth's vast resources, with her scientific accomplishments, with the unlimited production facilities of her industries, there was insufficient time in which to provide safety for her inhabitants. Had there been warning, the huge cities might have been walled in and made air-tight. With the perfection of atom-disruption and the transmutation of elements already accomplished, it would have been easily possible to produce an artificial atmosphere for the cities and, synthetically, all food and materials necessary to a continued existence. But the Horror had come as a complete surprise to the scientists. The world was caught unprepared.

Three days and nights, there were, of terror and of death, of stark madness and reversion to savagery. Millions took their own lives to escape the slow agony of suffocation. Astronomers held forth no hope; the cosmic dust cloud was of such enormity that many centuries would be required in passing through it. Its particles defied analysis.

On the fourth day the last few thousands perished in the natural caverns to which they had fled in hopes of conserving the small trace of atmospheric oxygen remaining in the deepest recesses. The surface world was a blasted and silent area, devoid of life.

But a small handful escaped. These few, scientists and adventurers with their families, had penetrated the earth's crust to a depth of several miles by means of an atom-disrupting ray generator and had come into a huge cavern where the air was comparatively good. Sealing off the entrance they had made, they were safe for the time. Immediately they set about to construct an oxygen-producing and carbon dioxide absorption plant, in order that the atmosphere of their retreat might be indefinitely retained, and kept fit for animal existence, even if not for plant life.

The Escape from the Catastrophe of the Dust

This expedition, though hastily organized, was well equipped. By the shore of a subterranean lake, its members set up their homes. The portable plant they had brought provided the power necessary to produce all needed materials. A larger power plant was set up and the great cavern soon was artificially lighted with enormous globes which emitted rays that were the exact equivalent of sunlight. Where plant life had never bloomed, a new and strange vegetation sprang into being under the influence of the beneficent rays. The source of the seeds which made this possible is still one of the mysteries of creation.*

A generation passed and the population of this new inner world had almost doubled. Long passages had been cut through the solid rock with atom-disruptors, and many new caverns were added to the realm. A communistic government was formed and all went well. Lives of comparative ease and luxury once more were possible.

After three hundred years, more than a million souls inhabited the numerous small cities of the caverns. Joined by innumerable passages, these formed a maze of underground workings, which extended under a large area of what had formerly been North America. Commerce between the cities had come to be considerable. With the passing of time and the increase in population, government changed. Each city was a state in itself and the first commune had given way to a number of small republics. Individual fortunes were amassed. There was keen rivalry between commercial houses and eventually between the cities.

The Great War of the Passages

THEN came the great War of the Passages. It was a frightful holocaust. Chemicals and deadly rays wiped out the populations of entire cities. The atom-disruptors reduced their edifices and their treasures to nothingness. Again was mankind well nigh effaced.

When peace came at last, only a small band remained. The work of more than three centuries had gone for naught. This band, handicapped by the destruction of most of the institutions and even of the records of history and of learning, nevertheless set out to found a new and still greater civilization. For a time they lived in the manner of the barbarians of the ancient surface world. Education, culture, and science were set back many centuries. It was not until some twenty generations had passed that a semblance of the old order returned.

Now, eleven centuries after the War of the Passages, the inner world was many times vaster than before. Its cities were larger and more numerous; its inhabitants numbered well over thirty millions. Not all the knowledge of ages was lost; the new civilization and the new sciences were probably superior to the old.

In one thing at least these latter-day dwellers of the cave cities had improved. Profiting by the lessons of the great war, they lived in peaceful accord. Their only social problem was the suppression of ordinary crime. The people of Raoz had withdrawn from the Union of Cities but theirs was an unwarlike secession, occasioned only by the queer determination to subsist entirely upon cavern farm products.

And now Raoz, in the deepest cavern of the realm, was in the grip of a disaster that was beyond the control of man.

Eleven Centuries Later—Ivarg and Aona in the Great Disaster

WHEN Ivarg and Aona came out into the street they found the city deserted. The great cavern resounded to crash upon crash as the west slope collapsed and thundered to the rocky floor. The Cascade of Light could be seen as an enormous geyser that spouted an ever-swelling stream of phosphorescent waters. The side streets at the western end of the city were flooded, and Central Avenue already was showered with spray. The southbound belts of the moving way had stopped, but those running north were operating at normal speed. The husky young engineer and the maiden of Raoz crossed quickly to the express belt and were carried at high speed away to the north.

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* This had actually been discovered many centuries before by experimenters of the old surface world. In the 20th century A.D. certain research engineers of one of the large electrical manufacturing companies produced similar results on a small scale. They were able to produce queer growths in deep caverns where man had never set foot before, merely by subjecting the soil to the influence of electric light. They were unable to learn the source of the seeds from which the vegetation grew, and dropped the experiments at that time as of no particular value. The process was, of course, highly developed in the years of the inside world, particularly of the peoples of Raoz.

Heaps of masonry and of broken crystal façades cluttered the sides of the avenue. At one point a fissure had opened to within a very few feet of the moving way. Buildings had split asunder and tumbled into the depths, from which yellow vapors curled out. At another place the pavement had sagged and broken, and the belt on which they traveled bumped along over a twisted and disjointed track.

A violent new shock threw them down and the din of crumbling walls was in their ears. The air was filled with flying particles and the choking dust of pulverized cement. When they arose, the moving way halted jerkily, lurched along with a screeching crunch of bearings and wheels, then stopped entirely. The light of the artificial suns had dimmed appreciably and was as unsteady now as the code flickering of a signal flash of the engineers.

There was no choice but to continue on foot. The tremblings of Mother Earth increased in frequency and violence. Walls of buildings thundered down before them and they were forced into the side streets to avoid the peril of the taller structures of the avenue.

The Council Had Not Listened to the Warnings

THEY had seen few corpses in the broader thoroughfare. Here in the narrow alleys they came upon many crushed and mutilated bodies, mostly of children, trampled down, or crushed by flying stone. Ivarg mouthed an oath. If only the council had listened!

Aona was fleet of foot. Until they had passed the city limits, she had no difficulty in keeping pace with Ivarg. Then, when they were in the midst of the carefully cultivated fields of her people, she tired. The man of the upper levels slackened his gait.

"It is not far," he encouraged the girl, "We'll make it."

As if to belie his words, the cavern arch high above them belched forth a torrent of liquid flame. A huge cleft had been opened up in the roof, and the stream of lava that was forcing upward from the depths was let loose upon the city behind. With a screaming hiss it mingled with the waters of the Cascade of Light. Great clouds of red-lit steam hid Raoz from their view. Abruptly the eleven suns blinked out. There was only the eerie flame-light to show them the way.

Ivarg picked up the exhausted girl once more. Cradling her in his arms as he would a child, he forged ahead through the damply odorous fields. Before him, less than a mile away, loomed the north wall of the cavern, its siliceous outcroppings fantastically agleam with twinkling reflections or ruddy hue. Behind was the doomed city, a steaming cauldron now, in the midst of a dozen pillars of fire—the funeral pyre of thousands who had failed to take heed.

Sulphurous gases filled the cavern, and a deluge of flaky ash came to make breathing still more difficult. Many times Ivarg was bogged in the lush soil of the fields, but always he managed to drag himself free and stagger on. Others had died here, in the rioting that came with the panicky exodus, or in the broad irrigation ditches. At the edge of one field was a heap of calceous fragments—a mass of stalactite formations which had dislodged from the cavern roof. Human arms and legs projected from the pile. Ivarg circled the ghastly mound and flung himself toward the north wall in the wake of a sparkling rivulet of lava which had reached out from the city.

Choking, gasping, eyes smarting from the rank gases, he gained the mouth of a passage. Gently he set Aona on her feet. She leaned on him for support. Convulsively clinging to his arm. Then, resolutely, she straightened her young body and flung back her head. Wavering lights from the city made a golden halo of her hair. Ivarg sucked in his breath sharply as the beauty of her smote him anew.

Here there was one of the great circular doors of copper-alloyed steel that hermetically sealed the passage. Fumbling in the near-darkness, Ivarg found the release button. The door swung inward and they passed through. Silently, its automatic mechanisms closed it behind them, and they were in utter blackness. Such doors were provided in all passages for the protection of other caverns from a major pollution or loss of oxygen in any one of them. Whether they would hold against the lava flow that was to fill the cavern of Raoz was another matter.*

The Polarized Force of Gravity

IVARG snapped on the electric torch he always carried and its bright beam illuminated the glass-smooth walls of the passage. Ahead of them was the curved metal approach of one of the gravity shafts.

He breathed more easily and looked down at the girl. "The rest is nothing more than an easy walk," he told her, "Four and a half miles straight up to the cavern of City Seven. And the way is smooth."

"Aona ran forward on horror-speed feet. But her courage and vigor had returned and she was eager to enter one of the mysterious shafts that had been forbidden to her as to all women of Raoz.

Ivarg watched expectantly as she mounted the curving approach. He permitted himself a faint smile when the polarized gravity force took hold of her body and she looked back with surprise-widened eyes. About midway of the bend, she was at an angle of forty-five degrees with the vertical, yet was erect and walking as easily as if on level ground.

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* The doors of the passages and vertical shafts likewise functioned to seal off the many caverns so that approximately uniform air pressures might be maintained in all. The inner world was thus a vast maze of independent air-cells, some large, some small, in each of which the air density was kept within breathable limits. Without such leak-proof doors, especially those which were placed at frequent intervals in the vertical shafts, the great weight of air above would have caused unbearable pressures in those caverns which were in the lower levels.

The gravity shafts of the inner world were vertical tubes that had been bored with atom-disruptors. These tubes were lined with graviloy, a permanently charged metal composition which had the effect of altering gravity within the tubes so that it acted at right angles to the natural gravity of the earth and with equal force. Thus a vertical passage was formed which was, in effect, the equivalent of a horizontal one. When within the artificial gravity field of its interior, the traveler was able to walk up or down between levels exactly as if in one of the ordinary lateral passages. It was like walking up a wall that had magically fallen flat. For the pedestrian the world had turned topsy-turvy to the extent of ninety degrees.

The Illusion Due to Polarized Gravity

"COME along, Ivarg," Aona called back excitedly, "You'll fall if you don't."

The man of the upper levels knew what she meant. From the elbow of the approach it appeared to her that he was on a steep slope, that the shaft above her was another slope reaching upward in the opposite direction. Quickly joined her.

In all his years of ranging the passages, Ivarg had never grown quite accustomed to that quick transition from the normal to lateral gravity. As he sped along the approach it seemed that his world rotated dizzily beneath his feet. Then, what had been vertical became horizontal and he was walking along the metal side of the shaft with Aona at his side.

The girl's astonishment had diverted her from thoughts of grief and of horror. For a half mile of unhurried walking Ivarg contented himself with reveling in the alternate chatter and deep silences of her changing moods, and in the play of emotions revealed in her features by the light of his torch.

He was rudely awakened from his contemplation of her by a terrific concussion somewhere deep in the planet's vitals. The metal-walled tube heaved and twisted so that it was difficult to keep their feet. Somewhere up ahead there was a deafening crash. Ivarg ran on before the girl with the beam of his torch playing on the smooth blue metal of the tube.

It was as he had feared. Collapsed by the shifting of rock strata, the tube was completely closed off. They could not go on.

CHAPTER III

Vagary of Nature

THEY turned and ran back as earth's convulsive movements subsided once more. A chance yet remained if the lava flow had not reached to the circular door. There were other passages, other gravity shafts.

But fate was against them. A second shock wrenched and tore the metal tube of the shaft before they had covered half the distance to the lower approach. Flung to his hands and knees, with Aona clinging to him in desperation, Ivarg saw the shaft sheared clean by a vein of igneous rock that slid across it. Their retreat was cut off.

The wall of rock formed by the vein continued to shift. The tube was jarred and whipped about as by a series of vast explosions. And then, where the rock wall had been, there was a black chasm. The end of the tube sagged and swayed where it dangled free.

Ivarg crawled forward until he reached the jagged break. The air in the shaft had become hot and fetid, but here there was a cool, fresh draft. He inhaled deeply as he cast the beam of his torch into the blackness ahead.

Looking downward with reference to the artificial gravity field, he saw that the fissure extended far beyond the range of his light. Straight ahead, which was actually downward with reference to earth's gravity, the igneous vein was almost within reach. It had moved a distance of only ten feet from the broken end of the tube.

As he swung his arm outward with the torch, Ivarg sensed the pull of normal gravity. Directly ahead of them, this was, but it was *down*. Once more he was confused by the relation of the artificial to the natural force. But he knew what he must do.

"Aona," he breathed, "This fresh crack is not what it seems. It has a horizontal floor and may lead to the cavern. At least it is no worse than this. Shall we try it?"

The girl looked at what seemed to be a vertical wall before her. At first dubious, she quickly understood. "Yes, let us try. Here we are trapped. There, anything may——"

"Good girl." With no further delay Ivarg thrust himself forward from the tube end until his dangling legs responded to natural gravity. It was a weird sensation with the upper part of his body clinging to the tube wall and the lower portion sagging toward the crevasse floor.

He shoved himself free of the shaft and his body seemed to hang stationary in space while the openings swung disconcertingly to new angles. Then he landed, cat-footed, on the smooth stone. The wall was horizontal beneath him. And the tube mouth, with Aona strangely glued to its side, was directly above him.

"Feet first," he warned her.

She came then, with a swoop, and Ivarg caught her to him as she fell.

In the haste of departure from Raoz his map of the passages had been left behind along with his other possessions. But he knew there were twenty-six whose sealed doors opened to the north wall of the cavern. And from each of these there was a gravity shaft extending to the regions above. If only this fissure extended to a tube which was free they might yet make their escape.

Searching for a Shaft and Finding One That Is Open

THE girl was uncomplaining as he searched the roof with the beam of his torch, unafraid as new temblors shook down loose stone about them. And, when they had located a shaft end that was so high above them as to be impossible of access, she exhibited only a mild degree of disappointment. Her faith in the man at her side was implicit.

Ivarg was losing confidence as they pressed farther and farther into the dark recesses of the crevasse. Here it was so low that it was necessary to crawl through on hands and knees. If the stratum shifted once more and closed the gap . . . .

And then he had found a shaft that was free and clear overhead. No more than an easy leap was needed to bring him within the influence of its gravity. Ivarg was inside in an instant, then, reaching out from its broken end, had pulled Aona in after him. With new energy they set out blithely along its length.

No further incident marked their leisurely flight. The temblors* and rumblings of the earth's vitals diminished as they progressed. And, an hour and a half later, they came out into one of the passages of the cavern of City Seven—the last of the refugees from ill-fated Raoz.

A Great City of the Inside World—A Dreaded Interview

CITY SEVEN, capital of the Union and housing more than two million souls, was situated in the largest cavern of the inside world. Its imposing towers rose high above the banks of the placid subterranean river which had been called "Serene." The number of its artificial suns was more than three hundred. Four main avenues paralleled the river, each with its system of moving ways. At numerous intersections of the cross-streets local belts were provided, which operated on a level that was twenty feet lower than the road ways of the avenues. City Seven was the acknowledged center of population, wealth, and activity of the realm. Visitors from the other cities provided a considerable transient element and contributed greatly to the institutions of learning, arts, sciences and amusement.

Ivarg, upon arriving there with Aona, proceeded at once to the express way of Avenue C and conveyed her to the finest hotel in the city. Here he saw to it that she was established in an excellent suite of rooms and made arrangements for her credit. He engaged a feminine companion from the Bureau of Chaperons—a pleasant, motherly woman—and instructed her minutely in the care that was to be taken of his charge.

Then, despite the girl's protestations, he left her.

"No, my dear," he replied soberly to her plea that he remain, "I must report to my superiors. My connection with the Bureau of Science is too good to lose. Perhaps I've lost it already. At any rate, it is necessary that I go there. And I'll be back in a few hours."

Reluctantly Aona let him go. A stranger in a strange city, she was a bit frightened by its greatness—by the staring men and women in the hotel—by the press on the moving ways, were she to venture outside. Although she was aware that thousands of her own people had escaped to City Seven, she knew not where they were. Nor did she care to search them out, for hers had ever been a sequestered existence. It was far better to keep to her rooms and await Ivarg's return.

The young engineer was uneasy in mind as he approached the great research laboratory of the Bureau. He knew that he had overstepped his authority in remaining so long in Raoz after permitting his men to return. And he had received no word from headquarters during his stay in the doomed city, though they might well have communicated with him by messenger had they required his return. He dreaded the encounter with Conrad, Chief of Engineers.

But he squared his shoulders when he stepped off the lift and stood before the chief's door. It would not do to be fainthearted.

Conrad, a squat, bull-necked individual with beetling brows, faced him across his littered desk top. His red face was expressionless as he greeted Ivarg.

"Thought you'd be showing up soon," he grunted, "Get the girl here safely?"

Ivarg flushed to the roots of his yellow hair. "Y-yes, Chief." he stammered, "I couldn't help it. I was never in a position of the kind before—I——"

"Yes, I know. Was young once myself."

Ivarg brightened. But the chief was frowning and his spatulate fingers tapped the edge of the desk. The younger man vouchsafed no further remarks.

"Have to cancel a quarter-year of your credit," Conrad went on, "Regulations, you understand. New assignment for you though, Ivarg. And a new credit rating twenty per cent higher. Run along now and report to Tomson."

Ivarg figured rapidly in his mind. With Aona to look after, and with the quarter-year cancellation, his credit would be strained. But the increased rating would quickly re-establish him. And he had been lucky even to retain his connection.

"Thanks, Chief," he offered, "It is more than I——"

Conrad waved his queer, thick hand with the flattened fingers. "Run along," he reiterated, "Work to do here, young fellow."

In the Time Standard Laboratory

IVARG found Tomson in the Time Standard Laboratory, adjusting his pocket chronometer. He nodded shortly in recognition of the young engineer, then returned his gaze to the main indicator as he awaited the midday signal.

In this room were the delicate gyroscopic instruments that made possible an accurate check of the earth's rotation. For a gyroscope, rotating in a vacuum and shielded from all magnetic and disturbing influence, maintains its axis in a position fixed in space. The earth rotates about it once in twenty-four hours, and it is thus a simple matter to determine the precise length of the day without astronomical observations, which, of course, were impossible to obtain by the scientists of the inner world. By applying proper corrections that had been preserved among records of ancient surface observational data, they had maintained the old time standards throughout the ages.

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* A trembling of the earth's surface—an incipient or undeveloped earthquake, sometimes misspelled "tremblor."

The midday signal shrilled and Tomson looked up from the indicator with a crooked smile, returning the chronometer to his pocket.

"Never loses a second," he bragged, "This watch of mine. But say, Ivarg, it's fine that you're back. Did Con tell you about the new job?"

"Only that I was to report to you." Ivarg gripped warmly the extended hand of the other; saw momentous news in his bright beady eyes.

"Listen, sapper: you're taking over the direction of air squads. Quade was transferred to the minerals while you were gone. Think you can do it?"

"Why, why—certainly." The new connection was an important one, Ivarg knew, and he was sure he could handle it. But Quade had been chained to his desk by details; had grown old on the job. Ivarg was young and healthy; restless;—a ranger of the passages.

Tomson laughed at his lugubrious expression. "I know what you're thinking," he chuckled, "but don't you believe we're going to let you get in the rut Quade was sunk in. You'll have a couple of slide-rule engineers to do the dirty work, and can be as active as you want to be yourself. Fact is, your first assignment will set you jumping right away. Come down to your new headquarters and I'll initiate you."

The New Assignment

THE headquarters of Director of Air Squads was more laboratory than office. Here were the myriads of indicating and recording instruments that kept constant check of the air conditioning of all main caverns, of communicating passages and countless alarm borings which extended in all directions from each center of population. Humidity, oxygen and carbon dioxide content, the presence of deleterious alien gases—all must be maintained within narrow prescribed limits. And optophone connections from this point to squad headquarters in all the cities of the realm provided for instant direction of remedial measures often needed. This was one of the most vital functions of the Bureau of Science, and its supervision an exacting and serious task.

Guzon, a classmate of Ivarg's, when both were in the University of Sciences, had been acting director since the removal of Quade. He was a good detail man, Ivarg knew, but of a personality which had been a handicap to his progress. He was a surly and uncommunicative fellow.

When Tomson brought Ivarg into the laboratory, Guzon came out of the walled-in Director's Office. A gaunt individual he was, with listless stooped form, his face was narrow and unsmiling, his eyes ever downcast. He extended a limp hand to his new superior. It was like an inflated rubber glove in Ivarg's firm clasp.

"Ivarg is taking over from you, Guzon," Tomson informed him, "We have decided, Conrad and I, that any organization changes he desires to effect will be entirely up to him. You will please act accordingly and will turn over to Ivarg the papers concerning the proposed Raoz shut-off."

"Very well." Without looking up at them, Guzon turned on his heel and shambled back into the office.

Tomson nudged Ivarg and dropped a meaning eyelid. "Use your own judgment, sapper," he whispered, "It's up to you." Abruptly then, he left the great chamber of the purring and clicking instruments.

Somewhat dazed by the swiftness and unconcern with which the thing had been arranged, and filled somehow with uneasiness over Guzon's manner, Ivarg went into the glass-partitioned enclosure of his new workroom.

CHAPTER IV

New Perils

"YOU and I will have no trouble," he told Guzon. "You know me; I know you. And I know your worth. There'll be no change in routine, unless it proves absolutely necessary, or in organization. You will continue in your present duties, but as assistant director. And I'll not interfere as long as things go smoothly. Is that fair enough?"

Ivarg had regarded the other narrowly as he talked. By not so much as a flicker of his lowered lips did Guzon indicate his feelings in the matter. But he had stepped back from the desk, signifying his relinquishment of the chair of authority, and was thrusting a sheaf of papers into the new director's hand.

"I'm satisfied," he said tonelessly, "And here are the papers Tomson mentioned."

Without further comment, Guzon shuffled from the room.

Ivarg looked after him thoughtfully. It was natural that a man should feel some resentment in thus being displaced by another. One man might make of such a disappointment a major issue, and sever his connection with the Bureau. Another might have become embittered and work on for the purpose of discrediting his successor. Or, realizing his own limitations, he might accept the situation gracefully and continue to do his best work in the position most suited to his abilities. It was impossible to know how Guzon was affected. Guzon was an enigma.

It would not do, however, to waste much thought on the matter. Ivarg dismissed it from his mind and transferred his attention to the papers he had been given.

When he had perused the first few pages he gave vent to a whistle of astonishment. This was a stupendous project the Bureau was planning, one that involved many risks and called for the greatest of care in execution. And for the closest co-operation of the air squads.

A Gigantic Project to Be Carried Out

IT all had to do with the disaster which had overtaken Raoz, and its possible effect on the rest of the inside world. The geologists, it was evident, had erred in their first computation of the size of the lake of lava whose fiery content was erupting into the cavern of Raoz. It now was certain that the volume of molten rock was many times greater than that required to completely fill the cavern. And that the pressure of shifting masses deep in the earth was great enough to force the level to flow to a point several miles above City Seven and City Nine, its nearest neighbor, was a definite possibility. There was imminent danger of the opening of new seams which would release noxious gases, and, later, the lava flow, into the upper caverns.

Ivarg unfolded the chart which was attached to the papers, placed his finger upon the red-circled area that marked the regions of internal fires far to the west of them.

"They don't know any too much about this," he muttered, "not even now, with the most modern of exploring instruments. My own idea is that hell in general is breaking loose over there."

His fingers followed the tracings in blue that indicated the proposed workings. New shafts to a depth of twenty miles from City Nine. Six from that point, and twelve altogether from City Seven. Sound plumbings had indicated by resonance the existence of a vast airless chamber at this extreme low level, a huge bubble formed in the earth's crust by vast upheavals of many millions of years before. The new shafts were to be connected by borings that would communicate with the lake of lava, or at least approach it within a short distance. Atomic blasts set off at the ends of the borings, when the time came, would open an enormous spillway to the depths. Presto!—the region of liquid fire would be emptied, and the menace to the inside world averted. It looked good on paper.

A Summary of Difficult Problems

BUT Ivarg knew that many difficulties would be encountered, as is always the case with any sort of engineering project. Lives must be lost in the effort, that was certain. There would be the generation of poisonous gases by combination of stray electrons released by the atom-disruptors, explosions, shiftings of rock masses caused by expansions due to temperature changes. Fresh seams would be opening into the caverns of City Seven and City Nine, and into the connecting passages and gravity shafts.

Tomson had spoken truly with reference to the activity that was to come with Ivarg's first assignment. Every resource of the air squads would be needed to maintain the purity of the medium so necessary to the functioning of human lungs and human bodies. And density as well; there must be no escape of life-giving air from the caverns or passages. It must be supplied in never-failing quality and quantity to the sappers and engineers in the new workings. And no deleterious elements that might be freed must be allowed to contaminate it.

Ivarg looked up to the master alarm board, as its signal tinkled a warning. A tiny red lamp glowed there, and another. Air pressure had lowered in passages 419 and 1008, far to the east, one near City Four, the other at City Ten, both in levels high above. Outside in the laboratory he heard the bustle and the shouted instructions always attendant upon such occurrences.

He pressed the button that would summon Guzon. In a moment the lanky assistant director had responded.

Guzon fixed his gaze upon the pinpoints of red brilliance on the alarm board. "Squads have been despatched to both points," he droned, "With all necessary equipment. Disruptors, glass sprays——"

"I know," Ivarg interrupted him, "I'm leaving all this routine to you. What I called you for is to ask if you have been through these." He indicated the papers before him.

Doubts About the Great Project

"I HAVE." Guzon's veiled eyes dropped to the chart.

"What do you think of it—the scheme?"

"I'd say it is a prodigious task."

"But, do you approve of it, Guzon?" Ivarg was persistent; he had his own doubts in the matter and was sure the other had studied the ramifications of the plan carefully.

"It's not for me to criticize."

Devils of the pits! Couldn't the fellow be made to talk? Ivarg was losing patience. "But you have criticisms—what are they?" he demanded.

Before Guzon could make reply, the wasp-like call of the optophone broke the strained silence. Ivarg flipped the lever of the instrument and a face materialized in its disc. The face of a woman—Mardine—the companion he had engaged for Aona.

"What is it?" he asked her in quick alarm.

"This long while I've tried to get you," the woman fluttered, "'Tis the young mistress Aona wishes to talk——"

The girl herself moved swiftly into view on the disc as if she had thrust the older woman aside. Her features were drawn, her eyes wide with anxiety. "You must come to me, Ivarg," she whispered through white lips, "That which I spoke of to you has returned to trouble me. I need help—you are all I have now——"

"I'll join you at once," Ivarg assured her hastily, then flipped the lever cutting off the voice and vision.

Something had warned him that Guzon must not know too much of this. He looked up quickly, surprising the man into the first direct look he recalled having had from him—ever. He recoiled inwardly at the sight, for Guzon's eyes were yellow and gleaming with diabolical cunning. Then they had turned away.

Spoke Ivarg sharply: "Carry on here, Guzon. I'll not be long away. And say nothing of this, you hear? I'll have a talk with you later."

He flung out of the door, leaving the other standing a lanky and slumped figure, yet somehow tense—menacing.

Ten minutes later he was at Aona's door, and he was not alone. He had stopped in at the Psychotechnical Institute and brought with him the skilled consultant, Waters.

Mardine admitted them, her honest face filled with concern. "The young mistress is in a sad state," she quavered, "What with the grief over her father and this other thing. 'Tis a queer thing, too, a fear of somethin'——"

Aona came swiftly to the man who was her sponsor and protector here in the strange city. "Ivarg," she faltered, "I did not wish to trouble you, but I couldn't bear it. Floa . . . ."

She saw Waters then, for the first time, and broke off abashed.

Hastily, Ivarg explained what he had done.

The Bond Between Two Separated Sisters

"NO, no!" the girl cried out hysterically, "I'll not let him operate to sever the bond. I'd lose Floa forever." She turned to flee the room.

Ivarg caught her to him gently. "You don't think I'd do that to you," he soothed her, "No, dear, Waters is here to help you. To make these contacts between your mind and Floa's more certain and explicit. Through him you'll be able to find her. You can go to her, do you understand?"

Gradually the overwrought girl came to a calmer state of mind. She listened attentively to the words of Waters.

"Your case," he assured her, "while unusual, is by no means unprecedented. Twins joined at birth, as were your sister and yourself, are always in close mental accord throughout life. Deeply united pairs can not be separated and seldom survive. But where the union is superficial and can be severed easily, as in your case, there still remains the bond of the mind. Or, shall I say, spirit. It is simply a matter of the subconscious minds of the two, a telepathic ability that is not granted by nature to ordinary mortals. The conscious mind is able to interpret only a part of the thought transferred to the subconscious, and there remains this uncertainty of detail which is so upsetting."

"And this can be remedied?" Aona's lips, parted now in tremulous expectancy, had regained their normal color.

"It can, by an entirely harmless drug which submerges the conscious mind in the subconscious. By the proper administering of this drug you will be enabled to learn precisely what danger threatens this twin of yours. And where she may be found."

"Oh," the girl breathed esctatically, "Can you administer it now?"

Waters laughed as he produced a hypodermic syringe. "Indeed I can, my dear young lady. Let me see that pretty arm of yours."

A moment later he withdrew the needle and sterilized the white skin surrounding the tiny wound. Aona's lids lowered drowzily.

"Now," said Waters to Mardine, who hovered anxiously near by, "You can take the young lady to her bed. After the good rest she is to have she will be a different person."

Sleepily, the girl blew Ivarg a kiss as Mardine led her away.

CHAPTER V

Best Laid Plans

"SHE'LL sleep the clock around," Waters told Ivarg when they had left the hotel, "or probably longer. Fifteen hours, perhaps. And when she has awakened she'll know the worst, or best, concerning the welfare of this twin. She'll have seen and talked with her as if by optophone and will know the circumstances under which she is living. And there'll be no further uncertainty."

Satisfied, Ivarg returned to the Bureau. Nothing of moment had transpired during his absence, as he quickly found upon referring to Guzon's report charts. But the records of changing conditions in the new shafts were becoming more voluminous. Guzon, silent and efficient, kept to his tasks.

After conferring with Tomson, Ivarg decided to visit the workings beneath the city. He equipped himself with the regulation shoulder pack of the air squads, which provided synthetic food rations for six days, needle gun, and portable glass spray, atom disruptor, and optophone. Thus prepared, he descended to the base of operations.

Here, in a great room hollowed from the solid rock and with glass-surfaced walls, was a scene of intense activity. The mouths of six new shafts yawned in its floor, and above these were the cable drums and the ventilating apparatuses of the sappers. A maze of flexible conduits connected with the supply lines of the oxygen plants and led into the shaft mouths. Gas-removal lines and the sensitive detectors of the air squads were everywhere.

The Great Excavations Visited by Ivarg

HUNDREDS of men were at work here, hundreds more in the depths of the shafts. Down there, Ivarg knew, were the helmeted operators of the huge disruptors, suspended in their control cages and guilding the roaring infernos of matter-annihilation, as they bored deeper and still deeper through the rock layers. The speed of the cable drums above gave evidence of the rapidity with which they were working. Following them down were the sappers and the air squads, the former closing off any natural openings that remained and sealing porous spots with their glass sprays to prevent seepage of water, the latter installing their endless chains of detectors and signalling for oxygen supply or gas removal line as the need arose.

Many of the refugees of Raoz were here slaving with the rest, and glad of the opportunity thus to establish a credit rating in order that they might live. Foolishly stubborn, and misled by their councilors, they had lost their all by the refusal to heed the warning sent by the Bureau.

A commotion arose at the mouth of shaft four. Turning quickly, Ivarg saw the main cable go slack and its drum cease moving. He rushed to the scene where, already, the supervising engineers were converging.

"Cave-in, cave-in!" someone was shouting, "Forty men down there."

Ivarg elbowed his way to the twenty foot rim of the pit. Frick, the geologist, was there with optophone in hand, manipulating its local call mechanism frantically.

After what seemed an age a face materialized in the disc, a grimy, blood-streaked face. But Ivarg recognized at once the features of Nolan, one of his closest friends.

In a Gas Pocket First—Then in a Branch Cavity

"BROKE through into a gas pocket," he choked, "Methane-ethane combination with sulphur dioxide. Disruptor men overcome—they're done for. But six of us here in branch cavity we've sealed off. Oxygen won't last long—get lines down if you can."

The face blurred and was gone.

"How far—how far down are they?" gasped Ivarg. He gripped the arm of Frick; saw the geologist's cheeks blanch.

"Oh, it's you, 'Varg," he returned. "'Fraid there's no chance for those boys. More than eight miles down, it happened. No man can reach them in time."

The spinning drum overhead screamed as the severed cable was reeled in. The great room echoed to the babble of a thousand excited voices. Ivarg was remembering the times he and Nolan had ventured into places of greatest danger—together. The chamber of giant lizards was a memory never to escape him—where Nolan had slain one of the vicious creatures with his bare hands to drag Ivarg from its clutches. Other times . . . .

"I'll reach them, Frick," he babbled, "Someone's got to go down there." Then, raising his voice until it was a harsh croaking that cut through the din—"Who'll go with me to get these men out? Come on, you fellows of the air squads—sappers, too——"

A hundred volunteered, noisily. Ivarg chose three. Men he knew; Dixon, Uller, Carey. Unmindful of the warnings of Frick and the superintendent of operations, they quickly made fast to the cable a sapper's bucket car and were inside it, dangling over the pit mouth. "Seal the shaft," Ivarg shouted, "and feed us compressed air until the pressure down there is about twenty pounds.* I'll use the opto and tell you when to increase it. Got to cut through to them—force back the gas."

The Long Descent Into the Shaft

HE waved his arm to the hoist operator and the bucket dropped with sickening speed into the darkness. Above was only a circle of scared faces, rapidly dwindling in size until only a point of light remained. A moment later even that was gone; the shaft mouth—excepting for the stuffing-box through which the cable ran—had been sealed.

Uller, a squad captain of Ivarg's new force, flashed the light of his torch on the walls that slipped past them so swiftly. Alternate strata the disruptor had pierced; limestone, basalt, rich metalliferous veins, all blurred together by the speed of descent, gleaming in huge patches with the fused silica of the sprays.

A hollow roar was in their ears from the weight of the air above. Later this pressure would be increased greatly by the introduction of compressed air from the pumps.

Ivarg strapped his portable optophone to his shoulders so that its miniature disc was directly before him. He tuned it to the radio frequency he had noted on Frick's dial. The speed of the bucket in its descent was lessening.

Frick's voice-vision flash came to them just before the bucket had stopped. The depth indicators were accurate only within a matter of several feet, but the bucket must be landed within inches of the true bottom of the shaft to avoid disaster to its occupants.

"Lower away!" Ivarg sang out as he cast the beam of his own torch downward. A mass of broken rock blocked the shaft down there. Then, "Slowly now—gently. About ten feet, I'd say. Now—hold it!"

The bucket struck bottom with a resounding clang, turned on its side over a rugged boulder, and spilled them out.

A pressure gauge reading showed just over twenty pounds and its needle was slowly rising. "We'll make a test bore at once," Ivarg called to Frick, "to determine the gas pressure below the closure. Stand by."

Calling for Nolan and the Others

HE instructed Dixon to sink a one inch bore with his portable disruptor, then droned a monotonous call into the optophone for Nolan. The tiny beam of the disruptor cut into the rock with a shrill scream of atoms torn asunder. Quickly the disc of incandescence that marked its progress sank from view.

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* Twenty pounds gauge. Down through the ages the inhabitants had retained the ancient units of the English-speaking races. Normal pressures in the caverns ranged between thirteen and sixteen pounds absolute, that is to say so many pounds above a perfect vacuum. Ordinary spring gauges read above atmospheric pressure and their indications are expressed as pounds gauge. Thus gauge pressures vary somewhat when related to the absolute, depending on the precise atmospheric pressure existing at the point where taken.

Still there was no response from Nolan. Ivarg imagined he had lost consciousness. And without indication of the location of this recess they were sealed in, it would be a difficult matter to find them. Unless they had left a trail.

Dixon's test bore broke through suddenly into the cavity below. A whistle of escaping gas followed, and the rank odor of the stuff was strong in their nostrils. Between them, Dixon and Carey had all they could do to force in the tapered tube of the test gauge and thus stop the flow. The gauge registered nearly two hundred pounds!

For the first time, Ivarg despaired. No human body can withstand a pressure greater than about sixty pounds to the square inch. Compressed air would avail them nothing against this pressure of gas—it was impossible to enter the cavity beneath them.

He flashed the news to Frick, then called again for Nolan. The disc of his optophone remained blank. But his heart leaped as a faint voice came from the instrument. Not Nolan's, but a voice that spoke for him.

"Nolan's knocked out," it whispered hoarsely, "Oxygen nearly gone. I'll give you a location signal."

The vision transmitter of Nolan's was not working, but the sound came through clearly, if weakly. There followed the high note of the location signal.

Cutting a Rescue Shaft

WITH quick fingers Ivarg adjusted the direction finding controls of his own instrument. The bearing was soon obtained.

"Now," he told his men rapidly, "A thirty inch bore —here. Just nineteen degrees from the horizontal."

They connected the energy producers of their four disruptors in series to produce a single blast of great force. Since one man could not long withstand the heat generated in the tunnel they were boring, they worked in relays behind the makeshift disruptor, that provided four times the power of a single portable.

The small shaft had sunk a hundred feet when Ivarg crawled in to replace Uller. The location signal in his optophone was very strong now, as if Nolan's instrument were only a few feet away. Stretching out his arms in the cramped quarters, he let loose the energy of the disruptor, shielding his face from the blast by flattening to the hot stone. Hours of this, it seemed, wriggling downward as the tunnel deepened. Then he had broken through. The glare of the disruptor illuminated a small cavity where forms of men were sprawled on the floor. A swift rush of air past his body told him that the pressure back there in the main shaft was sending new life and new hope to those within the cavity.

He called softly: "Nolan!" An incoherent mutter responded.

Entering the cavity then, he looked back up the slope of the bore. Dixon's face was at its mouth, lighted by the torches of the three who waited in the main shaft.

"We've found them," Ivarg yelled to him, "Come down, Dixon, and bring the end of a line. Have Uller and Carey stay there to haul them out."

He turned Nolan over as Dixon started down and was relieved to find that he still breathed. He babbled in his coma. Another man, a sapper, lay near him with the optophone gripped in fingers that had closed stiffly in death. Four more were in the cavity, but only one beside Nolan had survived.

Delay in the Rescue of Nolan and One Survivor

THERE came a shriek of rushing air and a pressure that beat at the drums of Ivarg's ears. A rending crash and the upflinging of the cavity floor. Crunching and grinding of earth's vitals as if the planet were in its final throes of agony. Then throbbing silence; blackness. How long Ivarg lay unconscious he had no means of knowing. He awakened finally under the ministrations of Nolan. A slim lad, one of Nolan's companions, was seated in the circle of torch-light, hopelessly muttering a call into an optophone.

Shaking his splitting head to clear his fogged senses, Ivarg rose painfully to his knees. "Nolan!" he gasped, "What was it?"

He gripped the other's hands for long moments neither spoke.

Then, resignedly, from Nolan—"An explosion in the main shaft above the original cave-in. Gas must have gone through. And Dixon is there in your tunnel —half of him—it is completely blocked."

"Any word from above?" Ivarg nodded toward the optophone, fully aroused now.

"No. Must be a metallic deposit above us, shielding the etheric waves. We can't raise them."

Ivarg stared in the eerie glare of the torches. The energy of the disruptors, he knew, was nearly exhausted. Already the air in the cavity was becoming foul, though it had been renewed when he first broke through. Only two cylinders of oxygen were in his kit.

Then he was pawing with trembling fingers at the frequency control of his own opto. "Maybe," he muttered, "A longer wave will get past the shield. It's worth trying, Nolan. How long have I been here?"

"A lifetime—many hours at least," husked Nolan.

"God!" Ivarg mouthed frantically the call of the main exchange in City Seven. Perhaps this lower frequency . . . . It did, it carried through. The disc lit waveringly. "Air squads headquarters," he demanded of the operator.

Communication with Headquarters—The End of City Seven

INDISTINCT features were in the disc then. Not Guzon's. A thin voice was in his ears. "Tomson!" exclaimed Ivarg.

It was all incredible, the news Tomson blurted hurriedly. City Seven overtaken by an unheralded doom, its populace fleeing in terror as had the people of Raoz. Liquid fire reaching up from an unexpected quarter. Suffocating gases. Rioting in the city streets. The air squads and other Bureau forces demoralized. The new workings cut off entirely by a monstrous upheaval, and no telling whether those at the base of operations or in other shafts could escape.

"Where's Guzon?" yelped Ivarg.

A sixth sense warned him of treachery, of some additional calamity brought about by Guzon. But he was entirely unprepared for Tomson's reply:

"Gone—deserted his post. He answered a call that came in for you—from the girl at the hotel. Left immediately. That was before the . . . ."

The voice from the optophone trailed off into silence and its disc went blank as a fresh convulsion seized the earth, shifting the hidden metallic deposit so as to absorb completely all radio waves.

All hell had broken loose up there. And Guzon of the shifty, yellow eyes had gone to Aona. Ivarg swore fervently. He was buried alive down there; helpless. Entombed, with Nolan and Petrie—and four staring corpses and deprived of the one means of communication.

CHAPTER VI

Aona's Awakening

OLD wives' tales, handed down through the ages and credited only by the most supersitious, were many and strange. Chief of these was the one concerning the caverns of steam outside the realm of the inner world where beast-men dwelt in dripping forests of gigantic vegetation—men who were not men but creatures resembling them only in that they walked erect and communicated one with the other by means of oral sounds. Creatures with crooked legs and long dangling arms, and whose bodies were entirely covered by shaggy hair. Ferocious monsters whose foreheads sloped back from glittering bloodshot eyes, and with jutting teeth that were yellow fangs. It was a story told surreptitiously by misguided nurses to frighten their youthful charges.

By the law of the Union no man was permitted to venture beyond the prescribed limits of the realm. There was the upper "ceiling," of course, where all passages and cavern roofs were thickly coated with the fused silica of the glass sprays. To bore through above this point would be to endanger the entire civilization, since porous areas and natural openings above this level might well communicate with the low pressure, poisoned air of the surface. This ceiling had been most closely guarded throughout the centuries.

To the north, east, south, and west, there were limits equally well defined. But these were occasioned by the existence of volcanic areas and caverns infested with poisonous subterranean growths as well as strange monsters of reptilian mold. Accredited rangers of the passages had penetrated such regions and lived to tell of their experience. Some had never returned. But history held no record of any actual encounter with beasts even remotely resembling mankind.

Only the myths of ancient days dealt with such nonsense.

The Sisters

AONA, daughter of Voyos, had no knowledge of these fables. In her carefully ordered existence there had been only the most reputable of tutors and companions. In childhood, with her twin, Floa, there was always the best a high credit rating could buy. Deprived of a mother at birth, the two girls had grown to young womanhood in at atmosphere of strictest gentility. Instructed in the most approved manner and modes of living, in the arts and classics, their education was of the finest. Romance, fantasy, and adventurous yearnings had existed unsuspectedly in the strangely attuned minds of the two. And it was probably not surprising that Floa, more restive than her twin, had broken away from parental authority after reaching full maturity and ventured into the unknown pleasures and distractions of the far cities of the realm, or into other and yet more dangerous regions.

Now three years later, Aona, bereft of a too austere but still beloved sire, and of all worldly possessions, was more than ever in need of the companionship of that sister she had lost. The strange bond between the two had strengthened rather than lessened in its hold.

A pleasant lassitude crept over her as the drug was administered by the psychotechnicist coursed through her veins. When Mardine had helped her to her bed in the hotel room, she lay for a time overcome with drowsiness. It was not like the desire to sleep, however, but a grateful lulling of the senses and a gradual loss of consciousness of her immediate surroundings. It was a transporting, in the spirit, to some far realm where nothing was the same. Suddenly, this new consciousness of hers was actually aroused, though she knew her body still lay supine between the silken covers of a prosaic hotel bed.

Abruptly she was a different being, a being only of the mind and unfettered by the limitations of an unwieldy bodily frame. She was willing herself to cross in an instant of time the gulf that separated her from Floa. An entity apart from the world of physical existence, yet possessed of the keenest of faculties.

The Vision of Aona

SHE seemed to be in an enormous cavern whose high arches were luminous with the reflections from a crater of liquid fire that was in its floor. A ceaselessly roaring geyser of steam and hot water rose from the depths of the crater, its white spouting plume reaching to the stalactites above and spreading in billows amongst them. Condensed in droplets of glittering moisture throughout the vast area, it fell as a continuous rain in the cavern below.

A forest of tall fronds covered the floor. It was vegetation of a kind Aona had never seen or even conceived of, in her wildest fancies. Huge, whittish stems that bore aloft great curling masses of pale green hue. Masses of vegetable matter that expanded and contracted rhythmically like the lungs of human beings, maintaining the oxygen supply of the cavern by decomposition of carbon dioxide. No need here for the complicated apparatus of the air squads.

And living creatures were there in the fronds, swinging from stem to stem and chattering shrilly in syllables that conveyed understanding between them. Manlike creatures with broad hairy chests and great powerful arms. Beings clothed only in their own fur, with slender appendages that trailed behind them and were used for clinging to the branches of the tall fronds, they nevertheless walked upright when on the floor of the cavern. Queer products of an evolution in natural caverns of which the civilization of the inner world had no knowledge.

For some reason that unreal and intangible, new being that was Aona's was in sympathy with the intelligent creatures. And yet the feeling was tempered with fear. The fear of the unknown and unexpected. Irresistibly she was drawn to observe them more closely.

Those in the leafy masses of vegetation were swinging from growth to growth in a steady progress toward the dazzling light of the central crater. On the cavern floor, in the dripping undergrowth, were many more of their fellows, all proceeding to the same point. Without conscious volition and no effort or sensation of movement, Aona found herself among them, hurrying with them, unseen and her presence unsuspected.

The influence of Floa's mind was strong upon her and suddenly she found she was able to comprehend the gibberings of the beast-men. And understanding came to her that they were gathering for a religious rite that was, with them, a periodic event. They chattered in awed tones of the gods of the fires, in more dubious accents of the white priestess and her mate. Instantly Aona knew that it was Floa of whom they spoke. Floa was here in this place, with a man of her choosing! Undoubtedly they had been captured by the beast-men when upon some rash, exploratory journey, and had, thus far, succeeded in saving themselves by posing as messengers of the fire gods.

Floa and Her Mate Among the Beast Men

MAGICALLY then, Aona had come out into the great open space that surrounded the crater. Thousands of the beast-men were here and the number of them was swelled constantly by newcomers from out the damp forests. With noisy demonstrations they were gathering close to the point where a broad stone slab had been erected as an altar at the rim of the crater.

Fearlessly erect at the altar were two figures in robes of scarlet. One of them was a man of heroic proportions, with bare arms folded across his deep chest. His cheeks showed ghastly white in contrast with the dark beard of lip and chin. The other was a slender feminine figure with perfect oval of waxen face framed by a glorious aureole of golden hair. Floa! Aona called soundlessly to her across the intervening space.

The head of the priestess, of Floa, came up sharply and her answer flashed back. She had heard and understood.

A commotion had arisen among the beast-men. In the forefront of their ranks was a group which thrust forward to the very foot of the altar. A number of captives were in their midst, creatures of their own kind but mutilated and bloody, bound with narrow thongs. It was loudly demanded by their captors that they be sacrificed to the gods of the fire in accordance with ancient custom.

"No, no!" Floa's voice arose in the speech of the beast-men. "It is the will of the gods that this be done no more. Their wish is that the transgressors of the law be punished by confinement rather than by death. It is the word of the gods of the pit."

A loud clamor was raised in protest. One who seemed to be a leader of the beast-men clambered to the stone slab and advanced upon the priestess with threatening snarls. Immediately awed silence came to replace the hubbub of yelpings. It was to be a test between the power of the beast-man and that of the self-styled messengers of the gods.

A Warning for the Beast Men—The Sacrifice

FLOA raised her hand and the man at her side joined his voice with hers in warning the one who had dared challenge their authority. Suddenly the beast-man lunged. With equal swiftness Floa's protector was upon him. Behind them dazzling white flame leaped up from the crater. The great mass of beast-men set up a plaintive chanting.

Amazingly the priest raised the struggling beast-man in his great arms and turned with him to face the white flames of the pit. Without hesitation he walked back to the crater's rim. Directly into the leaping fires. A moment he stood thus, bathed in the glare. Then it was seen that the beast-man was no longer in his arms. He had been flung headlong into the depths. And the chant of the assembled masses rose to a paean of new faith.

Unconcernedly, the priest walked back to the altar. Aona saw that his bare arms were seared and his hair and beard singed, that he was otherwise unharmed. And she knew that his scarlet robe was woven from asbestos fibre, his skin smeared with protective ointment. It was thus these two had maintained their sway over the beast-men.

Floa's plea came through the din of shouting to assuage Aona's horror and to bid her return for help. "Better that one agitator should perish than hundreds of hapless prisoners. But we can not thus deceive them forever. Go back, my sister, and return to us with men who will rescue us from this place. Mark well the way that you do not lose it. We will await you here."

The cavern then faded from view and Aona blew through dark passages whose windings and levels would remain indelibly recorded in her memory, and down through a shaft which terminated in an airlock. Below the airlock were other shafts, other passages that brought her to City Two.

And then she was in her hotel bed, panting with emotion. Fearful yet jubilant with the memory of it all.

"Mardine! Mardine!" she called loudly.

Aona's Awakening

THE older woman listened in amazement to her story. Hours upon end the young mistress had lain there as if dead. Only her measured breathing had assured Mardine that she was yet in the land of the living. And now the young mistress was talking excitedly of the mythical beast-men and of the way that led to their fearful retreat, and of this sister living among them. Wanting to go there herself, with an expedition. Mardine's poor head was in a whirl.

Immediately the girl was at the optophone, demanding a connection with the Bureau of Science. Unable to reach the young master, Ivarg, she was talking with a man of forbidding, cadaverous features. A man whose speech was oily and ingratiating, but whose yellow eyes sent a chill of horror chasing down Mardine's spine.

She watched the young mistress as she talked, and listened with a foreboding of disaster congealing within her.

"Gone!" the girl was saying, "You say Ivarg has left the city?"

"That is correct," the suave voice informed her, "I was about to inform you of his absence. The business of the Bureau has taken him to a distant point from which he will not return for many days. In the meantime, Ivarg has requested that I look out for you."

Mardine saw the lecherous glitter in the yellow eyes of him, but the girl was too greatly excited over her sister's predicament to take notice.

"Oh, oh," she wailed, "And I have a most important mission to accomplish. A visit to a far cavern—outside the realm. On behalf of my sister Floa. Ivarg would know of this; he would help——"

Guzon

"MY dear young lady," the sinister one named Guzon interrupted, "Ivarg has confided in me to a certain extent. He has instructed me to provide any assistance you might require in his absence. I shall be only too glad to be of service."

"Oh, I'm so thankful. You will be able to gather together a band of adventurers? To equip them?"

"Most assuredly. I have many friends—*good* friends. You may trust me implicitly, pretty maid of Raoz. You and I are going to get along famously. I'll be at your hotel in ten minutes."

Wise in the ways of mankind, and suspicious of Guzon, Mardine did her best to dissuade the girl from her purpose. But to no avail. It was impossible that the thing wait over until Ivarg's return. And had not Ivarg himself appointed the man Guzon to look out for her? When he might have been a bit more attentive on his own account. Or at least he might have notified her of his going from the city.

Her arguments wasted, Mardine lapsed into a gloomy silence while the girl prepared for her journey. And when the man had come and she had seen him face to face she was more than ever distrustful. But there was no dissuading the young mistress; reluctantly Mardine let her go with the overly gallant stranger.

They had not been gone more than five minutes when City Seven was rocked to its foundations by a gigantic loosing of natural forces. The newscast blare of the optophone warning her of the imminence of grave disaster, Mardine made her way, trembling and moaning, to the avenue.

And thus it was that Aona, thinking only of her quest, was set adrift in the midst of the great calamity with her companion, a man who had only evil in his heart.

CHAPTER VII

Ivarg and Nolan

"IN the narrow confines of the cavity eight miles below, Ivarg and Nolan took stock of their predicament and of the slender resources left to them. Petrie, the young sapper, was still frantically calling into one of the optophones on the local frequency band.

Opening the packs of the dead men and pooling all their equipment, they found there was little to give them hope. There were sufficient of the compressed vitamin pellets to provide them with sustenance for a period of five days. There was water in the canteens for an equal time, if used sparingly. But of what avail was this amount of provision, when oxygen in the cylinders would not last more than three or four hours?

Eight electric torches in all would provide light for many days more than they could possibly be needed for. The glass sprays and needle guns were useless here. Emptying the radioactive energy charges of all the portable disruptors and combining them in one, Ivarg found they had barely enough to bore a man-sized tunnel twenty feet into the rock. Besides, it had been reported that shaft four was filled with gas.

There were a half dozen of atomic blasting charges in one of the packs, charges which, if properly set, would—each one of them—tear away hundreds of tons of rock from a shaft wall or basalt cliff. Of what use were they in this tiny pocket in earth's rocky crust?

"We've *got* to get out," gritted Ivarg, "To City Seven."

"Mm-m. Big order, that." Nolan regarded his friend with pale, expressionless eyes. "What's this about Guzon and the girl at the hotel? Particular friend of yours, the lady?"

"Yes. I had expected to make her my legalized mate. Now——"

"Mm-m. Guzon's a bad one, 'Varg."

"In what way particularly?"

"Well, he lives in a style calling for a credit rating at least three times the one he is given by the Bureau. I nosed around a bit some forty days ago and got a line on him. Rumor in the hideaways of the lesser criminals has it that he is technical advisor to one of the most murderous and rapacious bands of thieves roving the upper levels and preying upon the cities."

"And he hates me like poison," observed Ivarg, "He's taking this chance to hurt some one he knows is dear to me. Though the world may crash about his ears he'll—Nolan, we must get back to the cities!"

"So you say." Nolan spread his hands wide in a gesture of helplessness and defeat. "Something warns me that this is our last adventure together, 'Varg."

Aimlessly turning in his fingers a mechanism he had removed from one of the packs, Ivarg suddenly gave vent to a sharp exclamation, so startling Petrie, that the lad dropped his optophone from quivering fingers.

"Nolan!—a sound detector," he gloated.

"And what then?" But Nolan sat up with a jerk.

"Shaft five—it can't be more than a thousand feet distant. We can locate it by the resonance point. Our disruptor capacity is only enough for a thirty inch bore twenty feet deep, but will carry a two inch bore forty-five hundred feet. We can reach shaft five, Nolan. With the atomic blasting charges we'll enlarge the hole——"

A Ray of Hope

PETRIE babbled incoherently of hope. Nolan leaned forward, his pale eyes aglow with excitement in the torchlight, then sank back with a grunt of disillusion.

"We're forgetting the eight miles to the cavern of operations, and the fact that even there we would be cut off from the city.

"I'm going to try it." Ivarg was doggedly persistent. "It is better to be active than to sit here and become raving maniacs before we die. The cable may still be in shaft five. Fresh air, perhaps, if they've kept shaft four sealed at the top. We might even get away from this magnetic deposit—be able to use the opto. And, up there—those fellows will dig out eventually. We've a dozen chances."

"Perhaps you're right." Nolan dragged his weakened body from the stone floor. "We'll lose nothing by trying, that's certain."

The lad Petrie was pathetically eager. Jubilant to the point of youthful tears.

They commenced a systematic sounding of the cavity walls with the sensitive resonance indicator. For many minutes there was only the sound of their heavy breathing and the swift tapping of the instrument's hammer, and the hiss of oxygen from one of the precious cylinders.

At length they were rewarded by definite indications of the existence of a hollow space having a volume about equal to that calculated by Ivarg for shaft five. A quick check of direction showed it to be a vertical passage; there could be no doubt that it was the shaft they sought. By the distance scale, they found it was but little more than eight hundred feet from them.

Petrie whooped in boyish glee. Even Nolan waxed enthusiastic.

Beginning a Shaft for Their Escape

IVARG set his disruptor for a two inch beam diameter and started its roaring energy boring toward the shaft at a sharp downward angle so the blasting charges might be permitted to slide by gravity to their proper positions for best effectiveness.

"How you going to keep them from slipping on through?" asked Nolan drily, "There's not a line among us."

"Simple enough. We'll unwind a coil of one of the optophones and use the fine wire. Let the charges down to the proper depth. Set them off with a needle-gun dart."

"Mm-m." Nolan was definitely interested now and was remembering certain ingenius expedients resorted to by his friend on other occasions when they had been in positions almost as hopeless as this.

The tiny roaring blast of the disruptor's beam tip had long since vanished in the rock wall. With the speed of an express belt of the moving ways, it was eating its path toward the required goal. Then it had broken through and Ivarg shut off the precious energy.

A puff of fresh air came through to them. The pressure in shaft five was slightly higher than their own, and its air was sweet and pure. Petrie yelped his joy. The threat of suffocation no longer impended.

"Lucky our air compression has lowered by absorption of the rock," muttered Ivarg, "No danger now of the sickness that comes with sudden release of the pressure." *

Petrie had wrenched the amplifying transformer from an optophone and removed its secondary winding. They attached the slender wire to the eye of a small metallic ovoid which contained an atomic blasting charge. Ivarg swung it to and fro jerkily to test the strength of the slim filament, and was satisfied. It would not do to lose even one of the six charges.

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* Caisson Disease, a severe and often fatal illness met with by workers under considerable pressure of air. In general the highest pressure considered as reasonably safe is slightly more than sixty pounds gauge. Even with lower pressures there is danger if the release of pressure is accomplished too quickly. The symptoms include pains in the muscles and joints (the "bends"), deafness, vomiting, paralysis and sometimes sudden death. These are not encountered while the pressure is raised nor during continuance, but after it has been reduced. They are caused by effervescence of gases absorbed by the body fluids during exposure to pressure. When the pressure is relieved the gases are set free in bubbles that cause the damage. If sufficient time is allowed in lowering from high to normal pressure, the gas comes out of solution slowly and is removed by the lungs without serious result. At least twenty minutes should be allowed for each fifteen pounds pressure above that of the atmosphere.

These little reservoirs of vast energy were provided with means of adjusting the blast to act in any desired direction and at any speed up to the full violence of instantaneous matter annihilation. Ivarg set the vernier screws of the first ovoid so the released force would be concentrated in the direction of shaft five with action delayed sufficiently to insure the complete disintegration of any large fragments which might otherwise fall into the shaft. If living humans were still at the bottom of shaft five, they must not be endangered.

Exploding a Tunnel for Their Release

CAREFULLY they paid out the wire until the charge was within two hundred feet of the end of the two inch bore. Then Ivarg inserted the tube of his needle gun in the opening and pressed its release. Then came the spang of the propelling ray and the shriek of the vibrating dart as it slithered down the bore.

"Get down—duck!" rasped Ivarg.

They crouched below the mouth of the small bore and waited with bated breath. Then came a prolonged screech of rending atoms and a mighty jarring shock. A tongue of blue flame screamed into the cavity and licked at the far wall, then subsided with a ripping sound.

Again and again this procedure was repeated until the air in the cavity was suffocatingly hot. Perspiration streamed from their pores. Their senses reeled from the successively nearer and more violent concussions. Then, when five of the ovoids had been used, there was left but a five foot section of the two inch bore. Beyond that was a great jagged passage fully ten feet across. Ivarg used half the remaining energy of his disruptor in enlarging the small bore to a diameter of twenty inches, through which they could barely squeeze.

Entering the Release Tunnel

ONCE inside the sloping passage, they stumbled along its broken floor toward shaft five. Rock masses here and there still glowed from the energy blasts. Dancing light flecks—the tiny incandescent bursts of dying atoms—still lingered in the heated air.

The blasted passage had cut cleanly into the smooth, vertical bore of shaft five. Here, at the juncture, the air was cooler. The three men inhaled it in deep gulps. Dizzy and spent, they sat for a long time silent—unable to think or to plan.

Presently Ivarg arose and cast the beam of his torch in the glassy wall of shaft five. Oxygen pipes dangled there, and the light lines of the sappers, but the main cable had been withdrawn. Below him as well as above, yawned the blackness of the twenty foot bore. No sounds of human activity were there, nor a sign of light other than that of his own torch. The far-away rumble of a rock slide was the only sound.

Young Petrie dragged himself to the end of the passage, moaning. He let out a yelp of terror as he looked down into the depths of the shaft and saw that no cable hung there. In fresh panic, he fumbled with his optophone, began his monotonous calling for help. Nolan, wisely resting, fixed his pale eyes on Ivarg solemnly.

"Here, you," growled Ivarg, pulling Petrie from the very edge of rock from which the shaft dropped away, "Come back in here. Want to fall in?"

The youngster was completely demoralized. His lip trembled, and the wild light of tottering reason was in his roving gaze.

"We better watch him," remarked Nolan.

Ivarg pulled the lad to him in a bear hug. "Come now, young fellow," he said heartily, "We'll find a way out of this. Don't give up yet. Here—you keep in from the edge. Keep calling on the local frequency and I'll try the main exchanges."

In faltering voice, Petrie renewed his calls. Ivarg cut in on the lower frequencies with his own opto and followed suit. But the radiated waves of neither instrument brought results.

At Shaft 5—No Answer to the 'Phone Calls

NOLAN, his strength returning, moved nearer the shaft and extended a collapsible reach-rod to one of the dangling air lines. Drawing it in, he punctured its wall with the strong blade of his knife. The hiss of escaping oxygen followed.

"The pumps are still working up there, 'Varg," he chirped, "Must be someone on the job. Let's——"

The rest was drowned out by the mad babblings of Petrie, who went suddenly into a collapse.

"Dead—it's dead!" he gibbered, "Ether's as dead as the stone. So are we—the damned engineers have killed us——"

With a wild shriek, he flung his optophone into the depths of the shaft, then started after it. Lunging swiftly to intercept him, Ivarg caught him at the very edge and bore him back. The crazed lad struck out at him with flailing arms, and froth was on his lips. Regretfully Ivarg brought up a short-arm punch that crashed to the point of his jaw. Petrie's head snapped back and he went down to lie as limp as an empty sack. His fears were forgotten for some time to come."

The Boy, Petrie, Forgets His Fears

"HAD to do it," Ivarg mumbled sheepishly, "Poor kid, he——"

"Listen 'Varg." Nolan was all excitement, bursting with an idea that drove all else from his mind. "Nobody's paying any attention to the optos up there. Even if our calls *are* getting through now. Too much else to think about at the minute. How about trying the disruptor?"

"You mean?—oh—yes, it will! With its smallest beam it'll carry the eight miles. Man, you're a wizzard at thinking up schemes."

Hastily they attached the disruptor to a reach-rod and swung it out into the shaft with its orifice pointed upwards. A slim pencil of pale violet light shot up into the blackness.

It was a long chance, but their only one. By moving the disruptor in a slow arc, they were searching with its beam for the true center of the long shaft. Eventually they would find it, if only for an instant at a time, and the energy would carry through to the cavern of operations above. By roaring contact with shaft mouth and cavern roof it could not fail to attract attention if any were alive up there. Possibly, just possibly, it would bring succor.

The growlings and tremblings of Mother Earth were resumed as the two friends awaited whatever fate might bring.

CHAPTER VIII

Exodus

FOR what seemed hours they played the beam up the long reaches of the shaft. Occasionally a fragment of stone, loosened by a contact of the ray somewhere high above, would come startlingly, hurtling downward into the black depths below, caroming from side to side of the shaft as it fell. But no signal came down to them.

"Better shut it off a while, hadn't we?" asked Nolan after endless time, "If they *should* let down a bucket car the beam'd wreck it."

"I'd think they'd drop a flare, if anyone is up there."

"Mm-m. Beam might destroy that, too."

"Hell, this is getting us nowhere fast. Suppose we increase the size of the beam, Nolan."

"Wouldn't last as long."

Facing a slow and horrible death as the two were, their nerves were steady, their courage high. Behind them, young Petrie stirred, blubbering.

Nolan jerked a thumb over his shoulder. "Good lad—he——"

The shrill, low-wave call of Ivarg's opto broke in on him. In an instant Ivarg had cut in. "—shaft five. Calling shaft five. Anyone in shaft five. Calling——"

The words of it were sweet music in their ears. The image flash came through on the disc.

"Frick!" bellowed Ivarg joyously, "Send down a car. Three of us down here—Nolan, Petrie, and myself."

"Great God!" Frick's round face was contorted in amazement and grimed with the sweat of his labors up there. "We thought you were done for, sure enough. How in—but never mind that. Probably we are all done for. Anyway, we'll send down a bucket. Cut off that damn disruptor beam before you cave-in our roof."

"Petrie!" Ivarg wheeled on the lad, who had raised himself to one elbow and was regarding them through filmed eyes, his jaw sagging. "Get that, boy? That was Frick. Good fellow, Frick. He's sending down a car. We'll be out of here in no time at all."

Frick was as good as his word. Within a quarter hour they were in one of the big steel buckets, rising swiftly toward the shaft mouth. Petrie, abashed and apologetic, was stammering his emotions.

"Shut up," Nolan growled softly, "or 'Varg is apt to swipe you another. Older and more experienced men than you have lost their heads in a pinch like that. Plenty of them."

Ivarg grinned good-humoredly. "That's right, Petrie. Forget about it now. We've all been through the same thing. Why——"

A Commotion in the Lower Shaft

WHAT he had been about to say in extenuation of the lad's breaking down was forgotten in the sudden uproar that was let loose beneath them. It was as if the gates of hell had opened into the shaft, vomiting liquid flame into its depths and shaking the earth to its very foundations in the opening. The shaft wall buckled and closed in upon them but the bucket car jerked upward and away. A million tons of rock fell away below them and crashed thunderously into a new sea of heaving white flame that had come into being with a tremendous lateral shift of lower strata. The foully poisonous breath of the pit reached up and had the three men in the speeding car choking, gasping for air.

Swift acceleration of the straining cable pressed them to the bucket bottom as they shot up out of the rising gases and the heat. A deafening bombilation of fearful sound beat at their senses, with hissing of subterranean waters flashing into steam as they spilled into the vast cauldron of fire. Explosions, each heavier than the last and following in such rapid succession as to merge into one endless blast of incredible volume. There were the grindings and rending sounds of enormous masses moving with relentless force. Then comparative silence, with only a sighing of straining rock layers and the booming uprush of boiling lava in the shaft.

But the bucket car was fast and whisked them speedily to the shaft mouth. Frick was there, awaiting them. And a hoist operator, who deserted his post immediately they had clambered from the car, ran away from the scene. Besides these two, the great room where operations had started was empty of life.

"Good work, Frick—thanks." Ivarg gripped the hand of their rescuer and could say no more. In a sweeping glance he saw that an electronic barrier had been set up to shut them off from shaft four and that a new passage had been cut from the far end of the huge room.

"No time to waste with talk," sputtered Frick, disclaiming any credit, "It was sheer luck I saw your signal. We were all leaving by the new bore over there. It leads to the southwest passages."

"Tell me about it—up there in City Seven."

"Can't now. You'll know soon enough. We have to move—fast."

Frick's words were emphasized by new rumblings beneath them and a puff of scalding vapor from shaft five. They ran toward the new bore. They were the last to escape from the place.

The Escape from the Gases of the Shaft

COMING into one of the lateral southwest passages, they were met by a surging mass of panic-stricken humanity. Men, women, and children, some of them clinging desperately to nondescript possessions and all mouthing their fear as they pushed on toward the gravity shafts.

Ivarg turned to force his way in the opposite directios—toward City Seven.

"You're crazy!" yelped Frick, clinging to his arm, "You can't go back there; the whole north end of the city's a sea of lava——"

"I've got to go back," growled Ivarg, shaking him off.

"But the Bureau's deserted—they——"

Frick's voice was lost in the general din. He was swept away by the stampeding mobs. But Nolan was still at Ivarg's elbow.

"It's the girl, isn't it?" he panted.

"Yes—got to find her." Ivarg gained a few yards in his rush against the tide of frantic humans.

"I'm sticking with you." Nolan was still there, but Frick and Petrie had been carried out in the press.

"Good fellow." The crowd thinned momentarily and Ivarg scuttled along a full hundred feet back toward the city.

Nolan stuck to him like glue.

A group of grimly silent fugitives came plodding steadily past them. More orderly these. They were people of Raoz and it was their second flight in three days. They were a more philosophical lot than those of City Seven, upon whom disaster had come without any warning whatsoever.

Still Ivarg and Nolan squeezed their way past the never-ending stream of them. Once more there was an easing of the flow they were bucking and for a space they were able to move with some speed.

Then came a howling and fighting mob of hoodlums. A woman let out an agonized scream and went down under their rush.

Instantly Nolan and Ivarg were in amongst them, striking out with sledgehammer fists. For a moment there was a mad furore of fighting. Men went down before them, toppling among their fellows, were raised to their feet and stumbled, crushing, in the direction they had been following.

Rescuing a Woman from the Mob—It Was Mardine!

THEY had rescued the woman then and dragged her out of the press to a niche where she was protected from the stamping feet. Ivarg raised her head to his knee and smoothed back the tangled hair.

"Mardine!" he gasped as her features were revealed.

Her eyes were closed but she opened them at sound of a familiar voice. "The young master," she moaned, Oh——"

Ivarg, with swiftly exploring fingers, found that no bones had been broken. She was only bruised and partly stunned.

"Aona!" he asked hoarsely, "Where is she?"

"Gone this long while, sir." The woman's eyes were wide with nameless horror and she sat up weakly as they helped her. "With a wicked man named Guzon. 'Twas myself as tried to stop her——"

"I know, I know. I'm not blaming you, Mardine. But, tell me now, what was his story? And hers?—after the drug."

Haltingly then, Mardine told him what had occurred. Her memory, fortunately, was good, and she was able to repeat almost word for word what the girl had told of her experience and what had passed between her and Guzon. When she had finished Ivarg's jaw was hard and a fierce glitter had come into his eyes.

"Guzon isn't taking her there—to the far passages," he said to Nolan, "He's taking her to his own haunts."

"At least those haunts are in the upper levels," Nolan offered.

"You can find them?"

"I'm sure I can. We'll——"

"Right." Ivarg turned to the woman, who was on her feet now and standing without assistance, "Are you all right to go on, Mardine?"

"Oh yes. Yes sir," she fluttered, "And thanking you, sir."

Taking Care of Mardine

"GOOD. Now, Mardine, listen to me. Practically all of the fugitives are taking the gravity shafts to the upper cities. But I have an idea even these will not be safe a little later. My advice to you is that you take the eastbound pneumatic tube and stay right aboard until you get to City Fifteen."

"But—but, sir—the distance! 'Tis all of six hunner mile."

"Don't wory about that; do as I say. I'll take care of the necessary credit."

Paying no attention to Mardine's expostulations of gratitude and of real fear at prospect of the long journey, they took her back into the passage. Keeping her between them, they slipped into the endless procession of jostling humanity and went on in the direction of the place from which they had come.

The cars of the pneumatic tube were not crowded, since there were few who deemed it necessary to leave the western cities. Besides, in order to travel any considerable distance in this manner, a high credit rating was essential. Ivarg had no difficulty in arranging for the required fare charge. Mardine was in a highly nervous and tearful state when they saw her off.

"Do you really believe what you told her, 'Varg?" asked Nolan, when they were again in the passage and headed for the gravity shafts, "That the cities on this end are all in danger?"

"I sure do. I'm no geologist, but I've ranged the passages for a few years and have studied rock formations and vertical seam characteristics quite a bit. Gas pressures and steam generation, too. And I mean to tell you this thing has only begun. It's coming on through to the ceiling, or I miss my guess."

"Mm-m. Did you tell that to Conrad and Tomson?"

"Oh sure, but they didn't pay much attention. And still I think they were doing a little private worrying along the same lines. No one wanted to admit it, even to himself."

They had turned up into one of the gravity shafts and were walking straight up—vertically—toward City Two, although seemingly traversing a horizontal, metal-walled tube. There was not the panic and the crowding now; ten gravity shafts led to the city five miles above from the passage they had come through. The mobs had divided, although a major portion of them had taken the first shaft they reached. Ivarg and Nolan, going on to the sixth shaft, had found comparatively few of the refugees using it. And these, assured now that they were on the way to safety, had forgotten their worst fears. Some of them were joking, even, and had slowed their pace to a leisurely saunter.

But Ivarg, with thoughts of Aona urging him on, kept up a swift loping gait that had Nolan puffing at his side.

CHAPTER IX

The Far Passages

WHEN they reached the cavern of City Two they found the police in charge of a vast encampment that was being established with amazing rapidity outside the city limits. With the millions of refugees from City Seven and City Nine, the accommodations of the upper level cities numbered one, two and three, would be entirely inadequate. And so all three were setting up these camps in the thick furze which carpeted the cavern floors outside their boundaries. And every precaution was being observed to prevent lawlessness, epidemic, and hardship.

Presenting their credentials to the officers who questioned them at the city limit, Ivarg and Nolan had no difficulty in entering.

"Before I report to Bureau Headquarters here," Ivarg said grimly, "You and I are going to hunt out Guzon. You think he will be found here, you said?"

"Here or in City Three. But 'Varg, he's probably on the lookout for you. Unless he took it for granted you'd never get out of the workings alive. Me, now, he wouldn't suspect. So why don't you go on to the Bureau—they'll need you, anyway—and I'll find Guzon——"

"No!" snapped Ivarg, "It's my job to get him, and——"

"Wait till I've finished. You know in your heart I'm right about this. Go on to the Bureau, I say, and I'll have you by opto the moment I get a line on him. I know some of these crooks, 'Varg." The last came out hesitatingly.

Ivarg pondered this. He knew something of the ways of the cut-throat bandits of the upper levels, having encountered some of them in the course of his ranging the passages. But Nolan, he was aware, knew far more than he. Nolan had a worthless brother whom he had been forced to get out of trouble times without number. Undoubtedly this brother had been the source of the original information. Nolan was counting on using him now, but must exercise the greatest caution . . .

"Go to it," agreed Ivarg, suddenly decided, "I know you won't fail me, ranger."

"Fail you! Hell, I wouldn't fall down on this for a class A life credit."

And so it was arranged. Impatient though he was and fearful of what Aona might be facing at Guzon's hands, Ivarg knew there was naught to be gained by a rash invasion of the dark dominions of those outside the law. He watched Nolan slip away down a side street and then made his own way to the local branch of the Bureau.

There had been no further earth tremors since they had left the southwest passage of City Seven, but Ivarg thought he detected a faint quivering of the floor as he went into the Bureau's building. Perhaps it was the vibration of a machine. He proceeded directly to the office of the Chief of the branch.

The Meeting in the Bureau

HE found both Conrad and Tomson in earnest conversation with the subordinate official. They hailed his coming with congratulations on his escape. Frick already had reported it and they had feared he was again in danger, presuming he had returned to City Seven.

"But I'm afraid this is only the beginning," Conrad told him, "The geologists report a rapid rise of lava from below. Other disturbing signs, as well. We're planning to order evacuation of all western cities."

"He'd like to say, 'I told you so,'" Tomson put in, "but won't do it."

Ivarg frowned. That tremor of the floor structure was more noticeable now. "No," he objected, "I don't claim to be an authority on seismology." He turned to Conrad. "Has the order been issued?" he asked respectfully.

"Just debating it when you came in." Conrad's long fingers were nervously tapping his chair arm. "What do you think?"

"If you consider my opinion worth anything, Chief, I'd not delay another minute."

Conrad nodded solemnly and turned to the optophone.

"How about my air squads?" Ivarg asked Tomson.

"It'll be every man for himself at this end of the realm. I'd order 'em to operate as independent units." Tomson was white, his jaw muscles working spasmodically. A distinct rumble had come from below.

"Right. And I'll tell them in City Twelve to take over the main control functions of eastern squads. When I reach there myself I'll resume charge. Do you approve?"

Tomson nodded absently; he was watching Conrad as he broke the news to the city governors. Ivarg left them, going to the laboratory of the local air squads.

The Five Cities Are Threatened

IT was inconceivable that all five cities of the western section of the realm were facing destruction. But, unfortunately, it was true. A fourth of the population of the Union was here in the west; probably half of the wealth. The combined capacity of all pneumatic tubes, foot-passages, and vehicular tunnels would not suffice to empty this vast population into the eastern cities in a period of less than six days. Meanwhile millions might be overtaken by the calamity that was sure to come. Little had Ivarg thought when in Raoz that the disturbance was to become so immediately widespread.

He made haste to instruct all western air squads. Each squad leader was to determine the activities of his own group, and they were to proceed eastward with all speed consistent with the performance of such of their functions as might become obviously necessary en route. For the cities of the east a new control headquarters was to be set up in City Twelve. Ivarg notified them there to take all supervisory functions pending his arrival.

"As if there were any certainty I *will* arrive," he grunted, flipping the lever of the optophone and sitting back to regard its blank disc anxiously, "Ought to be hearing from Nolan soon."

The laboratory was empty now; he had sent all instrument men on their way. A dozen red lights flickered on the duplicate alarm board before him—all minor difficulties in the eastern cities. One by one they snuffed out as the troubles were remedied. Already those boys in City Twelve were on the job. The alarm section for the west cities was dark—it had been disconnected entirely.

A Word from Nolan at Last—Aona Is Gone

JARRING his nerves, the optophone call shrilled. It was Nolan. "She's gone, 'Varg," came his friend's voice in rasping tones, "Guzon was here with here. Got some of his gang together and started with Aona for the cavern of the beast-men Mardine told us about."

"Gone!" For a moment Ivarg sat dazed. Certainly Guzon was not keeping his promise to the girl for her sake. "Get it, Nolan? The devil thinks he'll save his own hide by getting to the caverns above the ceiling. He's clever, Guzon is. Probably calculated the probabilities of this great disaster before any of the rest of us. And he's using Aona——"

"We can follow him," Nolan broke in impatiently, "I've learned the entrance location. Hurry—meet me at Avenue B, west end. Everyone is going the other way—east."

"Good fellow. I'll be there in no time at all." Ivarg was out of the room as he spoke, not pausing to cut off the optophone.

Luckily, he picked up an air squad on the way. Five men, fully equipped, their leader a young husky they called Les. Ivarg bid them accompany him and they went swiftly to the place where he was to meet Nolan.

So far as it had progressed, the evacuation of City Two was going forward with orderliness and despatch. The authorities had things well in hand, and the eastbound moving ways, though operating near the limit of capacity, were the scene of no such confusion and panic as had attended the flight from Raoz and, later, from cities Seven and Nine. Of course, there were as yet no terrifying phenomena in the upper caverns and passages. Beyond the slight earth tremors and a certain oppressiveness of the air caused by the compression of gases below, one might have wondered as to the reason for the great hegira.

"About time you got here," grumbled Nolan by way of greeting his friend, "Guzon has a half hour start on us now. But a good thing you brought these boys with you. Shall we get going?"

"Right. You're sure of the route?" Ivarg fell in with Nolan's long stride. They were heading toward the west wall of the cavern.

"Positive. And don't ask me how I learned it."

But Ivarg thought he knew. And a fortunate thing it was for them if that crooked brother of Nolan's had overheard Guzon's plans. Les and his squad trotted along behind them, asking no questions.

On the Road to Get Guzon—and Aona

OUT here the matted fields were deserted. Behind them the murmur of the city and of fleeing populations was dying away in the distance. With a little mental calculation Ivarg soon convinced himself that Guzon was not far wrong in believing that the caverns above the ceiling would provide a safe refuge. The disturbance in the depths beneath the western cities could hardly reach beyond that extreme upper level, for pressures would have equalized with the partial filling of the top city caverns. Aona's telepathic information, as told to them by Mardine, was undoubtedly authentic. There was an oxygen plant in the cavern above which had been provided by nature. If the entrance could be kept sealed against the poisonous gases that would rise from below, the place would prove an ideal sanctuary, provided no convulsions of the earth might open seams through the ceiling. Or—worse—break openings to the very surface far above. Otherwise, there would be only the beast-men to fear.

Entering a narrow and obviously unused passage, Ivarg's party came to an ancient gravity shaft. Following this upward for a distance of perhaps one mile, they came to what was apparently a dead end. Here the rock was thickly glazed throughout the area of a small cavity. It was the ceiling, but an extension of ancient workings that evidently had been long forgotten. There were not even the alarm detectors of the ceiling guard service.

But human beings had been here recently. Aona had passed this way! Ivarg pounced on a bit of filmy material that lay on the floor. It was a narrow sash she had worn—torn from her in a struggle, or left behind as a trail marker.

"Here we are!" The beam of Nolan's torch had slipped into a dark crevasse that clove the glassy wall. "The airlock."

An Ancient Airlock

CROWDING into the opening they found a hermetically sealed door of antique construction. Fumbling with its release mechanism, Ivarg got it open and plunged through into the lock. The others followed and Nolan closed the first door behind them, and then Ivarg opened the second. They passed into a long up-sloping tunnel where the air was cool and fresh, its pressure somewhat below that to which they were accustomed and having a heady tang.

Leading them at a killing pace, Ivarg forged onward and upward.

They had gone but a little way when the passage floor heaved to an upflinging of masses such as the inner world had never known. Deep in the reaches beneath them, a vast explosion had let loose destruction of unprecedented magnitude. Thrown flat by the first terrific concussion and the light of their torches snuffed out, Ivarg and his men in scrambling heaps, were choked by the dust of ages dislodged from the passage walls. All were stunned; deafened by the stupendous crashings of a world in the throes of gigantic upheaval.

First to recover, Ivarg snapped on the light of his torch and urged the others on. They went lurching ahead, stumbling, still dazed by the enormity of the thing. Cursing, some of them. But the air was at yet unpolluted. And only faintly echoing rumbles followed the great quake.

Les, dropping behind, was bellowing into the disc of his portable opto, trying to raise one of his fellows in the regions below, frantically reaching out with the ether waves of his instrument for news of this latest calamity.

Nolan, panting at Ivarg's side, blurted: "Devil to pay down there, 'Varg. There'll be a million fatalities."

"And more. Why——"

We May All Perish Together

LES had caught up with them, his chest-mounted optophone bobbing as he ran. His stare was one of sheer horror. "Good God," he babbled, "They're trapped below there. Nearly eight millions of them. There was a vertical shift just east of the cities. All lateral passages are blocked off completely. They can't get away."

Ivarg stopped in his tracks, gripping the squad leader's arm. "Have one of your men return, Les," he choked, "Or go back yourself, if you want to. It's their only hope. Get a few squads together and cut new openings to this place. Spread the word by opto—possibly a few thousands may be saved. Or we'll all perish together."

Eyes shining, Les nodded his understanding. "I'll do it, sir. Get as many through as possible. Then, when the gas comes, we'll seal the openings." On the last word he turned and raced down the slope.

Never, since the War of the Passages, had mankind faced so great and horrible a disaster.

CHAPTER X

Cavern of Thunders

COMING out into the realm of the beast-men, Ivarg and his party were amazed at the density of jungle confronting them. The tall, pale stems and the living, breathing leafy masses above; the cavern arches high overhead with the myriads of stalactites lighted to sparkling brilliance by the central crater of fire; the raucous gibberings of manlike, hairy beings swinging along through the growths and pausing to fix the intruders with staring, beady eyes—all conspired to bring to them the feeling that they had come into a new and entirely alien world.

But the beast-men, intent upon a steady progress toward the crater of flame, did not stop to give battle to the newcomers. Ivarg sensed that a gathering of unusual import was in progress. And he forced the pace of his little band through the dripping fronds. Drenched to the skin by the ceaseless downfall of the water of condemnation, they made their way doggedly in the direction of the center of illumination.

It was difficult going. At times they were knee deep in mossy pools where rubbery tendrils clung to their legs like reptilian creatures, striving to draw them deeper into the morass. Again they were slashing their way through wiry, tangled growths with ribbon beams projected from their disruptors. But their progress was fairly rapid, notwithstanding the difficulties. At length they emerged in a clearing where thousands of the beast-men were assembling in view of a stone altar at the rim of the crater.

Halting his men in the shadow of the forest, Ivarg looked out over the gathering. Upon the smooth stone slab of the altar he saw the two scarlet-robed figures of whom Mardine had babbled. He caught his breath sharply. One, the smaller of the two, was undoubtedly a woman. Facing the assemblage of muttering beast-men, she flung back the cowl of her robe and let loose a mass of golden hair that fell to her shoulders in gleaming profusion. It was Floa—there could be no doubt of the resemblance to her twin.

"Aona! My Sister!"

AND then, amazingly, she called out, "Aona! My sister."

Animal screechings rose up from the beast-men, and a great commotion broke out among them at a point not far from where Ivarg's men were hidden. Over there a group of men were battling their way from the outskirts of the mob. The twanging of needle-guns and the death song of quivering darts was in the air. Guzon and his band! In their midst, and fighting to release herself from the lanky madman who held her in one encircling arm, was Aona.

With a bellow of rage, Ivarg charged. "At them, men," he shouted, "Use your disruptors to clear the way, but watch out for the girl."

Their attention diverted from Guzon's band of gunmen by the sudden attack from their rear, hundreds of the beast-men turned to face the newcomers. With their orifices adjusted for narrow ribbon beams, the disruptors were far more destructive than needle-guns. The lunging, howling beast-men went down under the slashing rays like reeds of the fields of Raoz under the knives of the reaper.

And then the range was too short. They were in amongst the beast-men with disruptor tubes clubbed, fighting them in a desperate hand-to-hand encounter. Nolan battled close to Ivarg's side and the mighty blows of the two were clearing a path to the spot where Aona still struggled in the grasp of her captor. Guzon's men, welcoming the reinforcements, battled the beast-men the more furiously. But their leader seemed intent only upon preventing the girl's escape.

A leering animal face was thrust before Ivarg's and sharp claws gouged his breast. The head of the brute pressed down and long fangs were sunk in Ivarg's neck. Dizzy with the pain of it and gasping for breath, he brought up his disruptor tube in the pit of the monster's belly. His strength was leaving him, so that he was barely able to press the release of the ray. But he succeeded at last. The beast-man screamed horribly and loosened his awful hold, slumping to the ground with his midsection blown away.

Ivarg Attacked—The Fate of His Attacker

THAT seemed to end the fighting, though a fearful uproar had risen in the clearing. But Ivarg saw only Guzon's yellow eyes before him; saw his evil grin of triumph and Aona's white face straining away from him. There was a leveled needle-gun, with the fellow's bony finger pressed to the release. He lunged with the speed of a striking serpent, his left hand grasping the nose of the needle-gun and his right coming up from near the ground in a terrible blow that was destined for Guzon's jaw. There was the spang of the propelling ray and a sharp pain as the dart passed through the flesh between thumb and forefinger. But the messenger of death sped on to expand elsewhere its energy of vibratory dissolution. Simultaneously that hard right fist had crashed home. There was the crunch of smashed-in bone and the sharp snap of a broken neck as Guzon's head went back with the force of it. Ivarg caught Aona as she was released by the arm that went suddenly limp.

For long moments they clung together—wordless; unmindful of what was transpiring around them. For the time being it was sufficient that they were reunited.

"Better come out of it," Nolan's dry voice advised them, "Things are happening over at the altar."

It was indeed so. Tall and straight, the red-robed pseudo-priest stood with arm folded, shielding the girl Floa from a press of beast-men who had come up from the assemblage. And the horde of hairy monsters in the clearing was rushing toward them, forgetful of the fight with the newcomers.

Aona screamed as a huge beast-man rushed upon Floa's mate with great crushing arms flung wide to encompass him. Nolan snapped up his needle-gun. His aim was perfect; the singing dart thudded home and the monster collapsed in a heap, his great body melting away before their eyes in swift disintegration. But his fellows continued their advance, chanting a weird refrain of ominous and fearful sound.

And then an amazing thing occurred. The leaping white flame of the crater died down with a sucking sound and the brilliant light of the cavern roof faded to a dull red glow. The earth trembled, and awesome gulping noises came up from the crater. In superstitious terror the beast-men turned from the altar, their chant of death forgotten in the wild yells of fear that rose in their throats. Utterly demoralized, they fled into the forests to the east of the clearing.

In a flash, Ivarg knew what had happened. The convulsions deep down in the earth had opened the volcanic area which fed the crater and was draining it. Pressures down there were equalizing; there could be no further rising of the tide of destruction. But the beast-men were fleeing from the phenomenon as from a sign of the fire-god's wrath.

On the altar stone a man and a woman stood clasped in each other's arms, their forms faintly outlined against the dying glow of the crater.

With a cry of joy Aona stumbled across the intervening space, and Ivarg was close behind.

The Reunion of the Two Sisters

IT was a most enthusiastic reunion, the two girls laughing and crying in turn as is the way of the gentler sex. Ivarg and Nolan, taking an immediate liking for Parker, Floa's mate, sat there with him on the slab as he told the story of their sojourn among the beast-men.

But their rest was a short one. Hot, poisonous vapors swept up from the depths of the crater, forcing them down into the clearing. Fresh temblors shook the ground and the dull light of the cavern roof was fast dying down. Soon darkness would be upon them.

From out the forests to the west of the clearing came a clamoring army of humans. The vanguard of fugitives from the cities. Les had been successful in his efforts.

Ivarg shouted to the first of these who halted at sight of the little group by the altar: "Follow us into the other forest! Keep away from the crater and you'll all be safe."

It had come to him that the beast-men knew what they were about. In that direction there must be a communicating cavern or at least a sheltered area where experience had taught them that they were safe from the wrath of the gods of fire.

Guzon's men and those of the air squad were first to follow his advice. Then, with Aona hanging to his arm and Floa, Parker, and Nolan close behind, he plunged into the forest after them. The army of fugitives crossed the clearing in their wake.

It was an endless period of flight through the dense jungle with flashing torches their only light. Occasional light flashes on the cavern roof apprising them of fitful activity deep within the central crater. A steady downpour of condensed moisture. And the shoutings of countless refugees behind them. Frequent temblors were beneath them, but seeming to be lessening in intensity.

Then they had come out of the forest and the beam of Ivarg's torch played on a vertical wall of basalt a quarter of a mile ahead—a wall of columnar formation, eroded and crumbling with age. He searched its base with the light until it fell upon a passage mouth through which the last of the beast-men were vanishing—a freshly opened fissure.

"We'll wait," he told those around him, "until they've all gone through. Then we'll follow."

But Nature had not ceased her destructive pranks. The words had scarcely left his mouth when there came one final lateral shift that was a jerking forward of their little universe as if it were being hurled outward and away by some Gargantuan hidden hand. Stalactites thundered down into the forest behind them.

Breathless, they huddled together until the booming concussions subsided. Then Ivarg, casting the beam of his torch on the basalt wall, gave vent to a yelp of astonishment.

"Look!" he shouted, "It's falling. The wall is going out."

And so it was. With a titanic crash of huge rock masses it broke up and tumbled out into the cavern that lay beyond. Awed, stupefied by the vast collapse, they did not move for many minutes. Then, with the roar of the multitude behind them beating at their ears, they ran forward and down the rock-strewn slope into the far cavern.

The Commotions of Nature

IT was like no cavern ever conceived by the mind of man, this one to which they had come, and it must have been of enormous size. Rain of condensation beat down upon them in torrents. Jagged light flashes that swept across the cavern roof an incredible distance above them were followed by thunderings that echoed and re-echoed for many minutes afterward in the vast reaches of the place. A forest was here, of vegetation like nothing ever seen by any of them. Huge woody stems, some thicker than a man's body, rose from the carpet of soft undergrowth to unconscionable heights before branching out and sprouting foliage.

In certain caverns of the inner world there were frequent electrical storms caused by the charging and discharging of layers of dry air. But never was there a storm like this. Crash after crash reverberated through the immensity of the place and nearby flashes of electrical discharge swooping down from the far-away roof lighted the faces of the refugees with vivid intensity. They could *feel* the vastness of the cavern in the very air about them.

The Refuge for the Future

BUT it was a safe refuge; the air was pure, if a bit under pressure, and the earthquakes had ceased. If the lightnings did not strike them down they could go on living here. Even though darkness might hamper them for many days, they could go on. With the atom disruptors they could produce materials by reassembling of disassociated atoms in other arrangements. They would produce artificial suns, rear new dwellings to protect them from the rain and the lightnings. Synthetic food was easily produced. Thousands of them, perhaps millions, would go on living.

Down from the cavern of the beast-men came the fugitives in a never-ending stream. Definite knowledge of the number of casualties would not be available for many days. But it was certain that many had saved themselves. Of the beast-men there were no signs in the forest. If any had escaped burial under the collapsing wall, they had taken to the far reaches of the cavern.

Ivarg found a secluded place where a rock ledge overhung. It was comparatively dry here and he and his companions made themselves as comfortable as they could in the shelter. It was not long until Aona had fallen asleep with her head on his knee. The others, exhausted by their ordeal, were not long in following suit, and sleeping. Even though these thunders of the cavern rumbled incessantly they could sleep. All but Ivarg. He remained awake, thinking and planning for the girl whose precious body was so close. Through the weird foliage of the cavern he watched the flickering torches of the constantly swelling multitude of fugitives.

Hours passed and the thunders ceased. The vivid light flashes no longer crashed through the air. Even the rain had stopped. Out there in the forest were countless living souls from the western cities, some asleep, some moving onward in search of shelter. And their number was increasing by thousands as others came down over the broken wall.

Ivarg must have dozed then, for he came to with a start. The west wall of the cavern was illuminated with a rosy light. He rubbed his eyes and leaped to his feet. This cavern was truly enormous. That west wall was many miles away and curved upward into the darkness in a great arc that must have been of immense radius. The rosy light became ever brighter until the huge dome overhead was fairly agleam. A great ball of fire appeared above the far-away base of the wall, and the dome overhead became a deep blue in color. The light was so intense now, that Ivarg covered his eyes with his hand. And shoutings of fear and astonishment came up from the thousands of refugees who were awake.

"It Is the Sun! It Is the Sky!"

AND then Ivarg knew what it meant. "The sun, the sun!" he cried. "We've come to the surface. It is the sky overhead, not a cavern roof. A new era has come to civilization."

Aona, awakened by his uproar, leaped to her feet and was in his arms. Nolan, Floa, Parker—others from the woods were crowding in.

"See!" he shouted anew, "The sun, the sky. Those astronomers of ancient surface days were wrong; the earth passed through the cosmic cloud in a much shorter time than they expected. New life sprang up and has been developing through the centuries. Vegetation, in its normal evolution, has renewed the atmosphere, purified it. The best of good fortune has come to all of us who have survived."

Thousands, yes several millions, of his fellows *had* survived. An army of them crashed through the forest, exultant, hopeful. Ivarg looked up to the broken wall where thousands were still coming through. A mountain-side it had been, and had crashed outward. The cavern of the beast-men was in a mountain! So close they had been to the surface without suspecting. A species of apes, these beast-men, similar to those once inhabiting the surface. How they had lived in the cavern throughout the ages; from whence they had originated, he would never know. And he cared less now.

He looked down at Aona and smiled. He drew her close. Speaking no words, each knew the thoughts of the other. A new life—together—a new home. Happiness that had once seemed remote. And freedom from the constant menace of the fiery depths. All these were to be theirs.

The girl, peering over his shoulder, saw Floa and Parker similarly engaged. She sighed contentedly.

Nolan, looking away, gave over his thoughts to the new and more glorious progress of civilization that was in sight.

THE END

What Do You Know?

READERS of AMAZING STORIES have frequently commented upon the fact that there is more actual knowledge to be gained through reading its pages than from many a text-book. Moreover, most of the stories are written in a popular vein, making it possible for anyone to grasp important facts.

The questions which we give below are all answered on the pages as listed at the end of the questions. Please see if you can answer the questions without looking for the answer, and see how well you check up on your general knowledge of science.

1. What three ways of making candles can be described? (See page 295.)
2. What slight modification of the candle wick made it self-snuffing? (See page 295.)
3. How can a soap bubble film illustrate a proposition in geometry? (See page 296.)
4. How does film action apply in the burning of a candle? (See page 296.)
5. What two divisions exist in the candle-flame? (See page 296.)
6. Why does a candle give light? (See page 296.)
7. What function does insulin play when administered hypodermically? (See page 307.)
8. What is a temblor? (See page 352.)
9. How is the word "temblor" frequently misspelled? (See page 352.)
10. How could a record or observation of the earth's rotation be observed underground? (See page 353.)
11. What is the operation of spring air guages with reference to absolute air-Pressure? (See page 356.)
12. What is caisson disease? (See page 361.)
13. Describe the effects of high air pressure on the human system, and how are they coped with? (See page 361.)
14. What is one theory of the great Arizona meteor? (See page 374.)
15. What are the estimates of the weight of the great Greenland meteorite? (See page 374.)
16. What is the meaning of one or more knots as designating the speed of a ship? (See page 375.)
17. What is a knot in nautical meaning literally speaking? (See page 375.)
18. What can be said of the control by the actions of a human being of a space ship moving at the speed of light? (See page 376.)
19. What metal is displacing platinum as a catalyst in the sulphuric acid manufacture? (See page 376.)

The Flight of the RX-1

By Raymond Z. Gallun

PAUL HAHN chuckled inanely. It had been a good joke that old Rawlsey had told at the banquet about a negro and a Dutch sea captain. The foods and drinks had also been good. The company had been interesting and jovial. All in all he had thoroughly enjoyed himself. Now that the affair was over he could rest. God, how he wanted to rest! He felt himself floating through darkness that was softer and more soothing than black velvet—yes, black velvet. To-morrow he could start out on that crazy venture that old Rawlsey was financing. But to hell with it now. Sleep, that was what he wanted. His whole body begged for it, and he was very comfortable there, wherever he was, except that he felt sort of cramped, and his leg ached. Darn that aching; he wished that it would stop . . .

Slowly the delirium left him. His eyes burned. Uncertainly his gauntletted hand groped toward a misty blob of white light—a tiny circular window on which a thin film of frost had settled. The sun was shining on the frost, making it glisten. Raising himself from his huddled position, he stared about. There was an expression of puzzled vexation on his smooth, boyish face.

The compartment in which he found himself was very small; the circular floor was not more than five feet across, and the domed roof was only a foot over his head. Everything, with the exception of the three small windows, and a complicated arrangement of levers and dials against the wall, was padded with thick felt.

Gradually a realization of his position was coming into his fogged mind. Still wondering he looked down at himself; saw the trim leather coverall suit which he wore. It had military pockets. Lightly his gloved fingers touched his forehead, which was almost covered by the tight-fitting helmet. There was a painful bruise there. When his hand came away it was daubed with blood. His right leg too was badly scratched and bruised.

Paul Hahn's features became suddenly strained. His white lips were pursed hard. In a sort of panic he scrambled to a window and rubbed away the veiling frost. Through the thick pane of reinforced glass he could see an area of ground covered with an ash-grey dust, which glared painfully under the intense sunlight.

With a half-eager, half-fearful expectancy he hunched his head down between his shoulders so that he could look farther out over the strange landscape. For almost half a mile a desolate plain extended, its details harshly clear-cut. It was strewn with great lumps of rock, and jumbled masses of hardened lava, the jagged lines of which had never been softened by the eroding action of wind or rain. The portion of the level area which he could see, was terminated abruptly where dense shadows cast by the serrated range of mountains, poured down over the plain. The long, slender needles of darkness seemed to grope toward him over the dusty ground, like the black fingers of some nightmare monster. Close above the mountains, the slopes of which were hidden in the gloom, was the sun, shining with fierce white intensity. It was surrounded by the feathery, wispy veil of its corona. About it was the sky, dead black except for the cold stars, whose brightness was undiminished by their close proximity to the flaming solar orb.

At last Paul Hahn understood. For a full minute he gazed at the panorama of hellish grandeur spreading out before him. Except for the low weird hum of the soda-lime air purifying apparatus beneath the floor, there was no sound.

"God!" he rasped hoarsely. The word was half a sob. A paroxysm of terror and loneliness seized him, and he crumpled down beneath the window, his face buried in his arms.

BUT it did not last long. After a moment he raised himself. His teeth were gritted savagely, and he forced a smile to his lips.

"Steady boy—steady," he muttered reassuringly. "Just think, you're a pioneer, an explorer like Christopher Columbus. The first man—the very first—to reach the moon!"

The sound of his own voice startled him. It seemed so long since he had heard a human voice. And what he had told himself aided him to fix in his mind the realization of his achievement. It had seemed so utterly impossible! For an instant he felt like one who has defamed the sanctity of Nature's secrets.

He could remember all the details now.

For almost five years, since before his seventeenth birthday, he had piloted atmospheric rocket ships for the Rawlsey Transcontinental Air Lines. Then old George Rawlsey's experts had designed and built the moon rocket, RX-1, capable of carrying one man. This craft was the result of a long and gradual period of experimentation which had been initiated by Goddart, Valier and Opel more than a century before.

Competition for the privilege of piloting the RX-1 had been keen. The pilot must be young, courageous and resourceful; he must have stamina, and a superlatively cool head. With his usual thoroughness, Rawlsey had chosen carefully. He had selected Paul Hahn.

Paul had signed the papers releasing Rawlsey from all responsibility for what would inevitably happen to him. There had been a period of intensive training and instruction. Paul recalled the farewell banquet at Rawlsey's mansion. After midnight, the moon-bound vessel had roared its way toward zenith.

The trip had taken fifty-one hours and fourteen minutes—exactly as predicted. Every detail of the journey had corresponded with scientific nicety with the calculations of Rawlsey's engineers. The fifty tons of liquid fuel had been sufficient to propel the rocket to its goal, and to retard its speed in making a landing. Every ounce carried by the craft had been necessarily taken into consideration in planning the journey. The strictest economy of weights had had to be exercised. If the load of the RX-1 had been twenty-five pounds greater, the craft could not have reached the moon.

Paul remembered the last moments of the trip. Yawning directly below him had been the maw of the lunar crater, Plato. He had felt a sickening sensation of falling. About him had flamed the gaseous streams of the retarding vents. Then the crash had come—as predicted. It had not been really a very violent crash, but he had been badly bruised, and knocked senseless. He was on the floor of Plato now, in this tiny, cramped compartment—the last segment of the huge rocket that had left Earth a little over two days before.

Paul groped instinctively into his breast pocket, and drew forth a crumpled cigarette. His fingers trembled slightly as he lighted up. His hands were cold. It was still chilly in that sealed car, even under the fierce sunshine. Paul inhaled deeply several times, and then crushed the fire from the last cigarette.

He raised a section of the felted floor. Here, in a square compartment was an array of capsule-shaped oxygen bottles. All but one of them were empty. Only a half-hour supply remained. Those specialists of Rawlsey's were clever; they had predicted that he would have oxygen to last thirty minutes after his arrival on the moon. Paul managed to grin ruefully. He had plenty of work to do in that half-hour. His face grew hard and solemn, and faint hollows seemed suddenly to form in his normally plump cheeks.

Beside the oxygen flasks was a small box containing some chocolate bars, several sandwiches, and a bottle of water. No need to take food now, but the water would help. . . . .

HE opened another compartment and drew forth a peculiar sort of attire made of flexible wire cloth heavily doped with a heat-resisting, rubberite composition. He slipped quickly into the vacuum suit and closed the air-tight zipper sealers. Fastening the oxygen flask into place, he donned the aluminum headpiece, the forward portion of which was fitted with two enormous eye-windows of darkened glass.

A determined jerk undid the clamps which held the sealed hatch of the car in place. It popped open, pushed by the pressure of the expanding air inside the narrow quarters.

Almost carelessly Paul tossed several objects through the opening; a square metal case, a large flattened cylinder, another long cylinder tapered and formed like a torpedo. On earth it would have been very heavy, but here the force of gravity was only one sixth as great.

Paul Hahn, in his grotesque attire apparently become some native denizen of this weird world, clambered awkwardly through the hatch and dropped to the ground beside his paraphernalia. He glanced about tentatively, almost casually, over the dazzling floor of Plato, toward the encircling ring of mountains, and up into the black sky, which was in harsh contrast with the blazing, sunlit landscape.

His sense of wonder and awe seemed somehow deadened since his first realization of achievement. Only the prepondering silence of the place entered his consciousness, and it was best to keep that out of one's mind as much as possible. There was no sound except the gentle hiss of the oxygen valve inside his helmet. . . .

The thrill of accomplishment, of touching the soil of Luna, was strangely absent. And he had looked forward to it so eagerly. A dulling influence seemed to have dropped down on his mind, smothering all emotions. He wondered why he wasn't fearful; why he wasn't exultant. Instead of these seemingly logical feelings, his mind was filled only with a strange, dead, numbing calm. He had felt it only once before when he had dragged the charred body of his best friend, Stan Lawson from the smoking remains of his flier. He had heard that condemned men often felt that way. Was he not also——? He checked the thought. It was best to let the blurred, soothing influence that had come over him, prevail. The ways of Nature were kind.

There was work to do, and the moments were slipping away. The catchy tune of a love song that had recently become popular was throbbing inside his head. Unconsciously he began to hum it.

He picked up the large flattened cylinder he had tossed from the car, and hurried toward the western edge of the crater. There the sharp-cut shadows were lengthening, as the long lunar afternoon progressed. Easy bounds carried him rapidly over the rough terrain. He did not stop where the shadows began, but continued for several hundred yards toward the mountain slopes. The gloom, unabated by atmospheric diffusion of light, was almost like the interior of a dark cave.

He set the cylinder on the ground and hurriedly unscrewed from it a metal peg. A long leap carried him clear of the zone of danger. Almost immediately there was a soundless flash of white light, as the upper surface of the cylinder was blasted off; then a fountain of incandescent fire spouted upward. The oxy-magnesium flare would continue to burn for several minutes.

Paul Hahn did not pause to watch the inspiring sight. Instead he hastened back in the direction of the rocket car. He knew that from the grey-green sphere hanging stationary in the sky above, thousands of telescopes were probing the lunar surface, seeking for a sign. The astronomers would detect a faint, flickering spot of light in the shaded portion of Plato.

PAUL could feel eyes upon him; eyes that worshipped him as a hero, and eyes that condemned him as a fool. In a moment the news casters would be feeding the report of his success to the hungry populace. Paul felt a faint, unrecompensing thrill that was quickly swallowed up by the vast silent loneliness about him.

He leaped over a narrow chasm that zigzagged its erratic way across the crater floor. Its bottom, if bottom it had, was lost in utter darkness.

An area of grey, darker than the general hue of the ashy soil, caught his attention. He stooped to examine it. He found that it was a cluster of lichen-like growths, the small crinkled whorls of which seemed perfectly dry and lifeless, like moldy paper. That the moon possessed an extremely tenuous atmosphere had long been suspected; and it was evident now that there was also a trace of water in the soil—enough to support rudimentary forms of vegetation. Paul plucked several of the lunar plants free. Here was something that should interest Rawlsey's specialists.

Continuing toward the rocket car, his eyes roved searchingly over the ground about him. A curious bit of rock crystal glinted in the dust. He picked it up.

From the corner of his eye he saw, or thought he saw, the shadow of a rock several hundred yards distant, change shape slightly, as though something had moved there. He paused, and watched intently for several moments, but detected nothing more.

Arriving beside the battered and scorched rocket car, he opened his case of instruments. First he took his camera, and made a number of exposures—of the vehicle which had brought him to the moon, of the crater's floor in various directions, of the sky, of the sun, and of the earth. The picture of the half-illuminated terrestrial globe, with its cloud-mottled continents and its grey seas, would be very interesting. Last of all, by using the time shutter of the camera, he contrived to get a picture of himself. Old Rawlsey had particularly instructed him to do that. . . .

Working with thoughtless, automatic efficiency, for his mind was still in a sort of daze, he placed the roll of film in a small aluminum cylinder.

Paul's aneroid barometer registered an atmospheric pressure of nine millemeters—an insignificant amount when compared with the normal earthly pressure of seventy-four centimeters. He jotted the reading down in his log book with a pencil.

With the aid of a small hand-pump he managed to secure a compressed sample of lunar air. It would probably be mostly carbon dioxide. The plants he had plucked from the crater's floor, together with a sample of soil and the fragment of rock crystal he had picked up, he placed in a cylinder similar to the one in which he had put the films.

Crouching against the side of the car, he proceeded to make further entries in his log book which contained a record of his trip: "Landed in crater Plato on lunar surface at 5:16 A. M., Central Standard Time. Hit pretty hard and was senseless for a minute or two. There were no unusual developments, however. Everything proceeded exactly as predicted."

Paul winced as he wrote this sentence. Exactly as predicted! Those words had a peculiar, heartless, fatalistic significance which left no room for so soft a thing as hope.

The pencil, clutched in the clumsy black space-glove, which concealed Paul's human hand, giving it a fearsome aspect that was misleading, continued to scrawl across the paper: "Conditions here are much as they have been described for hundreds of years. I have found little that is new except the lichens which I am sending. There is vegetable life here in a rudimentary or decadent form. . . .

"However I am deeply grateful to you, Mr. Rawlsey, for the privilege of piloting your rocket on this successful trip . . ." Words, not feelings—polite words!

"Good luck to Fred Forster and Roy Leland. Tell the other boys best wishes. . . ."

PAUL scrawled his name at the bottom of the page. He closed the book with rough emphasis, as though he sought by so doing to shut certain thoughts from his mind.

He opened a compartment in the nose of the messenger rocket—the tall tapered cylinder with the finned tail. Into the small receptacle he crammed his samples and log book.

His hand clutched the starting plug on the side of the messenger. He jerked it free and stepped back. A cloud of hot water swirled about him, as the rocket's initial kick struck the ground. Bits of rock and granules of sand pinged against his armor. He watched the messenger go hurtling and dwindling toward the sky. The flaming streamer of its propelling jets became a shrunken, nebulous wisp that vanished among the stars. Astronomers of earth would see that streamer. They would plot its course, determining the point at which the rocket would land. Probably it would hit an ocean. But on reaching earth it would be light enough to float.

About Paul, the milky, powdery vapor still eddied. Unsupported by the tenuous atmosphere, it clung close to the ground, flowing sluggishly toward the hollows like a viscid fluid.

Paul looked at his wrist watch. His work had taken twenty-three minutes. He had seven minutes left. It was almost time to pay. Should he just sit down calmly and wait? No, he couldn't do that! The floodgates of his dulled emotions were breaking down.

He started to run out across the crater's floor. He'd keep going until he dropped. It might help him to keep from thinking. If there were only some straw to cling to!

Jumbled things played in his mind. Blaring radio reports and newspaper headlines: "Youth chosen to fly moon rocket—sacrifices himself to science." Words full of meaning: Courage, fear, fame, cynicism, death! He had bid for fame and the price was death. He had known that the price was death, and he had chosen calmly. Why couldn't he be calm now? Human aspirations. Human failings. Iron and clay. It wasn't hard to die, but in this hellish loneliness! God!"

He was only vaguely conscious that he was racing along at breakneck speed, his grotesque, inhuman shadow bobbing along behind him. His breath whistled sibilantly between clenched teeth.

Something round and spiny got beneath his feet. He stumbled and fell sprawling. Scrambling about, he saw a large spherical object of a dusty grey shade. It was covered with sharp spikes. Now it was opening like the bud of a great flower. Pinkish cords were shooting up from its center, groping toward him hungrily. It was a plant of some kind—a plant possessing the animal characteristic of fairly rapid motion. Yes, there was sufficient atmosphere here to support certain kinds of vegetable life.

The tentacles of the thing clutched Paul's ankle in a fierce invitation. A round object bobbed back and forth above its spherical body—an eye possibly.

Paul took up the challenge eagerly, throwing himself boldly upon his bizarre adversary. "Come on, you devil!" he hissed. "I'm crazy to fight you!"

He had no weapons other than his metal-gauntletted hands; yet he struck out fiercely, clawing, tearing at the tough, leathery appendages that sought to enfold him. A half-dozen tentacles wrapped themselves about his middle; began to contract crushingly. The flexible armor he wore protected him somewhat. One by one with fiendish strength he ripped the tendrils free. Here was something tangible to fight—something that might yield to human brawn and intelligence. It wasn't like the silence, and the horrible deadly loneliness of this almost airless world.

His hooked fingers reached the center of the spheroid from which the tenacles of the eye sprouted. He clutched at the pulpy flesh and jerked viciously. The animate vegetable convulsed, became limp in his grasp. He dropped it to the ground.

The battle had cleared his whirling brain somewhat. "Steady, you damned fool!" he muttered.

His head felt giddy. The hiss of the oxygen valve inside his helmet had ceased. He knew that the supply was used up. His violent exertion had depleted it a minute or two ahead of time. The air he breathed was stuffy, heavy.

A new thought came into his mind. Supposing that after all there was an atmosphere on the moon that would support human life? Somewhere down in deep volcanic caverns. That narrow chasm over there . . . Maybe at the bottom . . . It offered a chance, the slimmest of chances, to fight, to keep one's energies occupied.

Paul struggled toward the chasm. A thin veil seemed dropping, thickening before his eyes. His lungs labored gaspingly.

He could no longer see. Awkwardly, blindly he tottered on, stumbled, continued forward on his hands and knees, fell on his stomach and tried to drag himself forward with clawed fingers.

His body was without feeling now. He was unable to direct the movements of his dying muscles. Colors rippled inside his head; words, names. He'd been a fool. Or had he? It was hard to tell. No need to bother about that now. There would be other young fools to follow his lead, of course . . . Fred . . . . Advancement. Science. Glory. Idealistic, impetuous young fools. Maybe they'd colonize the moon some day. There might be a city here in Plato—a city——

In the crater the sharp shadows slowly lengthened. The alien creature lay crumpled at the brink of the chasm. . . .

THE END

In the Realm of Books

"Our Stone-Pelted Planet," by H. H. Nininger, A. M. XXV—237 Pages. Published by Houghton Mifflin Company, Cambridge, Mass. $3.00.

This book is particularly welcome to AMAZING STORIES because in many of our tales the dangers of collisions with meteorites is brought into the story. We may not realize it, but our earth is constantly bombarded by these celestial projectiles. A man walking in the street is liable to be struck by one and every time an airplane or a balloon takes to the air, the same danger exists. The saving clause is that the target, if we may call it so, is so small in area and relatively speaking meteorites are so rare, that the risk recedes far below the danger-point. The book is of the greatest interest. It is profusely illustrated and tells the story of the great meteorites of the world in true literary style. The Great Arizona Meteor, which has always been a bit of a mystery, is described and the supposition is made that it was not a single mass but was a cluster of smaller meteorites something like shrapnel or grapeshot. The Siberian Meteorite has its almost pathetic story told to us. Here was a chance for an adequate investigation of the fall of an enormous visitant and in the text the author laments that no one had the chance to investigate and report upon its adequately. The great meteor fell on June 30th, 1908 and the stories of the effect, like an earthquake, of this great projectile and of the immense heat which it developed impress one as almost exaggerations. Mr. L. Kulik attempted to find the exact location of the meteorite, but we are told that the expedition was more or less of a failure for lack of funds and difficulties of transportation. It was found definitely that it had devastated a large area and prostrated trees whose trunks lie in fan-like fashion on the ground. Very impressive illustrations are given showing the Siberian area and the devastated forest. It is believed by some that it was an aggregate of meteorites and that some of the masses may approximate 130 tons in weight. It was supposed to have been surrounded by hot gas over 1,000 degrees centigrade in temperature. It started fires before it reached the ground. The earth tremors were felt on a railroad train 400 miles away. The tragedy is expressed by the author as follows: "It will scarcely cease to be a matter of deepest regret that such an event as this unparalleled meteoric fall should have passed with so little notice until twenty years had elapsed. It is a sad comment on the mental alertness of the scientific world that even until now there has been no adequate effort put forth to collect the great fund of information which awaits any well-equipped expedition into those parts." The author tells the story of the Kimberly Farm. There were so many meteorites imbedded in the soil that they interfered with the plowing, but while Mr. Kimberly regarded them with dislike and scorn, Mrs. Kimberly collected them. She got a very fine 150 lb. specimen on his wagon to be taken to the house, but he threw it away in disgust. Later, when Mrs. Kimberly began selling these meteorites his point of view had a violent change, and he went off in search of the 150 lb. specimen, but never could find it. The impressive story of Peary, who brought the great Greenland meteorite to this country, is most impressive. The weight of the meteorite is estimated between 46½ to 73 tons—a very wide range owing to its extremely irregular shape. Our excuse for this entirely inadequate review is lack of space, but the book will be found extremely interesting and the author succeeds in telling the reader everything that he looks for and a good deal more.—EDITOR.

NOTICE

THE SKYLARK OF SPACE

A number of readers have written us to the effect that they would like to see a reprint of "The Skylark of Space." If it is republished by us it would begin in the August or September issue of AMAZING STORIES. It has a sequel which appeared some months after the original story. It would require about six issues, but the first story would be complete in two or three issues without the sequel. The object of this notice is to ask readers who would appreciate a reprint of Dr. Edward E. Smith's story to let us know by letter or postal card as soon as possible. It rests with our readers whether the story is to be reprinted.

DISCUSSIONS

In this department we shall discuss, every month, topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine. In case a special personal answer is required, a nominal fee of 25c to cover time and postage is required.

About Interplanetary Stories of Different Types

Editor, AMAZING STORIES:

I am a creature of creature inertia. I weigh 180 pounds. I have received such a kick of energy on reading the letter of Mr. Jaffe in the April issue that I have now attained the velocity of 185,900 miles per second and my inertial mass has increased to fifteen times that of my rest mass. That means that I certainly feel dynamic.

I venture to say, that to compare the works of both Mr. Campbell and Dr. Smith is as intelligent as comparing the origin of the dipterous insects with that of the Bryophyta.

In the first place, as far as A. S. is concerned, Dr. Smith is a pioneer of a certain type of Interplanetary Story. Severe criticism of that type of story has been indulged in by every whippersnapper who has learned the elements of science as taught in schools.

Both Dr. Smith and Mr. Campbell are endeavoring to express themselves as originally as possible, and though they both write the same type of fiction, their personalities, ideas, pride and difference in ages have made them very critical of each other.

Mr. Jaffe's objections to "fourth order" effects show two things: first, that he is not a scientist, and consequently, he is not sufficiently informed as regards the trend of modern physics.

The very problem that I am at present engaged with, is the designing of some type of oscillator that will not be subject to the inherent unsuitability of the Hartley oscillator for the production of exceedingly short waves. This problem led me to Schrödinger.

Schrödinger, in his theory of Wave Mechanics, gives every particle its own three dimensions i.e. two electrons will have six dimensions. He imagines that there is a sub-ether filled with vibrations that are much faster than we can perceive even with instruments. The heterodyning of these oscillations, produce in the immediate ether, those vibrations which we perceive as electro-magnetic radiation. This Mr. Jaffe, is where Dr. Smith's rays of the various orders come in above the second.

Secondly, in science fiction, we must allow the author some liberty, otherwise all writings will become stereotyped. I would advise Mr. Jaffe to *study* the Skylark stories.

The problem of the velocity can be overcome by transferring the machine to a different set of dimensions where time goes faster than in our set. That would cause an effect of traveling faster than light in our dimensions.

Now, Mr. Editor, the remainder of this letter is to you. On page 1084, Chapter XI, in "The Tomb of Time," I would call your attention to that expression, "three knots an hour." Does not Mr. Tooker know that the definition of a knot is one nautical mile per hour?

As regards your cover it is certainly a relief from the lurid things that you sometimes had. But, I was led into buying your magazine by seeing Wesso's illustration of Skylark Three in the August, 1930, number. Your artists all differ; Wesso has no comparison as regards interplanetary stories. You should always keep him especially for that type of work.

I have read many types of science fiction, and I must say that you certainly keep A. S. clean. I have read fiction in other magazines by the same authors that write for you, and I must say that I have been just nauseated by some of it. To me A. S. is a relaxation. I would never be satisfied without A. S., and when the time comes around for the next issue, I experience a vague longing for the good old book.

Tell Dr. Smith that if he does not write a sequel to Skylark Three, he is going to hear about it. As for Mr. Campbell, more of Arcot and Morey or I shall call him Coward.

Finally, please allow me to apologize for taking up your valuable time. How about forming an anti-superstition society for A. S.?

Jaime Lanz,
1453 Mansfield,
Montreal, P 2, Canada.

(In Webster's Unabridged dictionary the exact definition of a knot is given in the nautical sense of speed as one nautical mile per hour as you say, but it is often used as indicating a nautical mile, as Webster has it, loosely, in such an expression as "The speed of nine knots per hour." It is also used to denote a division in the old-fashioned log line bearing the ratio to a mile that 28 seconds do to an hour. We have to thank you for the good you say of us which makes it much easier to accept your well thought-out criticisms.—EDITOR.)

A Letter from Graiglwyd Road—See if You Can Find It on the Map of Wales

Editor, AMAZING STORIES:

Your magazine having given me considerable pleasure for quite a lengthy period, I think it is about time I wrote some remarks expressing an English viewpoint.

It seems to me that we can divide your stories roughly into two categories—those that are really literary efforts of scientific imagination and those which are merely "Penny Dreadfuls" dressed up in scientifiction clothing. To my mind there are far too many of the latter type. The science fiction masterpieces of Wells, Verne, Kipling and Lytton live because of their literary merit as well as because of the vivid imagination displayed. I think you should pay more attention to the construction of the story you publish. A seemingly ridiculous set of circumstances woven together by a clever writer makes a splendid story, while the same theme badly written becomes mere twaddle.

To my mind the outstanding stories that I have read are "White Lily" and "Paradise and Iron"—No others have ever approached these. They were conceived with fine imagination and well constructed. The Skylark series were fascinating but were only saved from being in my second category by clever writing. In connection with these yarns I may say that I have been very much interested in the exchange between Miss Robb and Dr. Smith. With all deference to my fair countrywoman, I think Dr. Smith is right in using the slang of his compatriots. As long as disgusting terms are left out, I think "Yankee" slang is priceless, and I've had more laughs over it, than I've had at many a theatre! It is part of the American nation and the spontaneous way it comes out is perfectly marvelous and after all the stories were written for Americans!

Whilst on the subject of stories, I'd like to raise a query. How can ships, moving at the speed of light or anywhere near it be controlled by a human being? Surely this transference of thought from say, eye to brain and thence to hand is so much slower than the speed quoted that the ship would be in another part of space before a manœuver could be carried out.

I dislike intensely all stories connected with medical or surgical experiments, and I think they are definitely harmful to many readers. I would also urge your writers to think of some decent characteristics for the inhabitants of other planets. Why everybody except those inhabiting this earth should be villainous is beyond me. Surely as we look back over the centuries we see that in the course of evolution only good survives, so if all these mythical civilizations are millions of years more advanced than we are, it would appear feasible to expect them to be better and not worse than we are. I readily admit that all entities in the universe may not be built on the same lines as we are, but most of your writers conceive them as human or semi-human.

Do not let your cover become too gaudy—it frequently gives the impression that it enclosed one of the aforementioned "Penny Dreadfuls!" I must admit that

I usually tear it off before settling down to read in the bus, going home! Over here gaudy covers of this kind are "not quite nice!"

I notice in the "Discussions" that two subjects seem to be perennial bones of contention, i.e., reprints and scientific data in stories. With regard to the first, I think a judicious use of reprints would be better than inferior new stuff. There are some old stories like the "Moon Pool" and "Skylark of Space" that are universally approved by your readers, and which I, for one, would like a chance of reading.

With regard to the inclusion of scientific data in your stories, I think it is right as long as it is kept on more or less "popular" lines. To go off into mathematical dissertations is, however, definitely wrong as very few can follow them and even less are interested. A lot, I think, lies in the cleverness shown by the author in introducing the scientific explanations. In some cases they are dragged in by the scruff of the neck and then it is irritating.

Well, Mr. Editor, I am afraid that I have trespassed on your space far too much, but I cannot close without wishing you every success in your efforts to entertain and instruct those of us who like to let the imagination stray into fields as yet unexplored. In spite of my criticisms, believe me I thoroughly enjoy Amazing Stories and what is more pass them on to a friend who enjoys them even more.

Eric W. Sharf,
Sunny Brow,
Graiglwyd Rd.,
Swansea, Wales.

(We have had much pleasure in receiving letters from English, Australian and New Zealand correspondents. We take this as a virtual tribute to and appreciation of our efforts, for they are true efforts. Two of our best liked authors are medical men, yet they steer clear of medical or surgical stories as a rule in what they write for us. We are now receiving stories from England and recently published one by an Australian writer. You appreciate American slang, but there is not much of it used in our ordinary intercourse. Your point about the speed of light and nerve transmission is well taken. It will be a long time before it is put to the practical test. You will not find too many mathematical digressions in our columns—we are watching for them, as we have your point of view. We shall hope for further correspondence from you.—Editor.)

A Very Comforting Letter for a Much-Tried Editor

Editor, Amazing Stories:

The May issue of Amazing Stories contains two outstanding stories that I enjoyed very much. "Martian and Troglodyte" by Neil R. Jones is the first and "Jeremiah Jones, Alchemist" by P. Schuyler Miller, the second. The first is a change from other interplanetary tales in that it is "outsiders" who visit the earth instead of the usual earthmen visitors to Mars or other planets in the stories. I got quite a "kick" out of Mr. Miller's story. I had an idea that it would end as it did. I wish that A. Hyatt Verrill would write more stories like "Beyond the Pole," "The World of the Giant Ants" and his other early stories.

Morey's illustrations for "Martian and Troglodyte" and "The Three Suns of Ev" are well done.

Jack Darrow,
4224 N. Sawyer Ave.,
Chicago, Illinois.

(The calm nature of the Martians in Neil R. Jones story brought out the savagery of the cavemen in good relief. But the "poor" cavemen could hardly give us of the 20th Century any lessons in cold-blooded cruelty, almost worse than our killings in wars, with the highly "improved" weapons and with flamethrowers and gases. The latter may not figure as killers, but they are barbaric to the last degree, and educated and professional barbarism is a poor development in humanity. "Jeremiah Jones, Alchemist" was an excellent story.—Editor).

An Excellent Criticism of a Chemical "Bull" in a Story

Editor, Amazing Stories:

I do not know the date of publication of the College Chemistry that Mr. Richard Rush Murray refers to in his letter published in the May issue of Amazing Stories. I would refer him however to page 111, Mineral Resources of the United States, 1929, United States Bureau of Mines, and under the article on Rare Metals by Paul M. Tyler and Alice V. Petar, he will find "—at present vanadium oxide (or compounds made therefrom) is used more or less extensively as a catalytic agent, especially in the manufacture of contact sulphuric acid and phthalic anhydride:—" Would also refer him to Alexander, Jerome. "Vanadium and some of its Industrial Applications." Chem. and Ind. vol. 48, 1929, pp. 871-8, 895-901.

Other Government Bulletins on the Rare Metals, give further reference to the use of vanadium for this purpose, and a letter to the Rare Metals Division of the U. S. Bureau of Mines at Washington, will receive further information as to the extent that vanadium is displacing platinum for the above purpose.

This is however quite a recent development and text books on chemistry published a few years ago would probably not mention it. I happen to be connected with vanadium mining and production, so naturally keep posted on its uses.

The stories in the last two issues of your magazine show a very considerable improvement over the first number issued with the new cover. However you occasionally publish a story in which the scientific detail is utterly impossible and absurd, and I wonder why you let this get by.

For instance in the story Universal Merry-Go-Round, in the April issue, the author has Professor Witherton explain how he is going to provide oxygen on the trip through space. He proposes to generate electricity and decompose water with it, using an oil furnace to heat the space ship and also to make steam for the generator. Such a furnace would consume a hundred times the quantity of oxygen that the passengers needed, and in a very few minutes the furnace would cease to function from lack of oxygen. It would be safe to say that the total efficiency of such a plant would not exceed 15% and would really be less than this. In other words, the plant itself would consume 100 cubic feet of oxygen in producing 15 feet.

There are practical methods of producing oxygen, in an enclosed vessel, like a space ship, and there is no necessity for an author to use an impossible method. If he does not happen to know how to do it, he had better leave such details to the reader's imagination.

Walter X. Osborn,
Gila Bend, Arizona.

(There was no need of mentioning vanadium in the "Radicalite" story. We are glad to publish some lines about it from a vanadium expert. The error in "Universal Merry-Go-Round" escaped observation, and we thank you for calling attention to our dereliction. Poor Carnot, what would he think?—Editor).

The Temperature of Space

Editor, Amazing Stories:

There has been an argument concerning the temperature of space in "our Discussion" Column. May I say a few words?

Dr. Henry Norris Russell has said that the phrase "temperature of space" is a very loose one and that it really means the temperature which some test object would gradually approach if it were left to itself at a given point, subject to all influences which normally act upon it there.

The temperature of a black body, that is a perfect absorber of all kind of radiation at any given point in space, would be greater than that of a non-perfect absorber. Two planets or a planet and its satellite at the same distance from their star need not be of the same temperature, example: The earth and the moon.

I still hold to my criticism of "The Doubt." You contend that it was a very curious study of abnormal psychology. Perhaps it was—I am no psychologist. If it was then almost any magazine carries a story in which one may find some abnormal psychology, the abnormality in many cases being in the author and not in his characters.

I want to congratulate Mr. J. W. Campbell, Jr., his stories most assuredly have improved.

George P. Kirkpatrick,
River Road,
Piermont, N. Y.

(The temperature of space probably approaches the absolute zero. At a relatively short distance the sun from which we get practically all our heat would be a mere pin-point of light, and would affect the temperature of a body very slightly. The enormous number of stars do little to increase the temperature of the earth. The reason that the heat of the earth exceeds that of the moon is because of its atmosphere. It is like a gardener's cold-frame. The air passes luminous heat, as it may be conveniently termed, but retains much non-luminous heat. The atmosphere acts like the glass in a greenhouse or cold-frame. The water-vapor in the air forms clouds, and helps to retain the heat. The moon is cold on its dark area because it has hardly any atmosphere. The earth has a blanket—the moon has none. On its lighted area the moon's superficial heat may be very high.

"The Doubt" has pleased many readers, some like yourself do not care for it.—EDITOR).

A High Appreciation of Our Work

Editor, AMAZING STORIES:

Congratulations on the new cover! It is the greatest improvement ever made in a science-fiction magazine. I've been reading AMAZING STORIES more or less regularly since the first issue and I still remember that I was attracted to it by the cover; but I also remember that then, and ever since, I carried the magazine in such a manner that the cover was not visible to passers-by. I feel no inclination to do that now. Sigmond's covers are a credit to a fine magazine.

I don't agree with some of your self-appointed critics (isn't that strange?) I am no believer in the myth of "The Good Old Days." Like the octogenarian who says, "Winter ain't what it used to be." I remember when I was a boy, the snow came up to my shoulders (forgetting, in the meantime, that that was only one of the many winters, and in addition, that I was only half as tall then as now). These mourners over the astonishingly lively corpse of AMAZING STORIES, list a few super-great stories, spread over a period of five or six years, and demand that you fill the present magazine with stories of equal caliber. The octogenarian forgets the winters it didn't snow, and the critics forget the early numbers which were poor.

I, too, could wish for a magazine filled with such classics as "The Moon Pool" (which I had read before it appeared in A. S. "Station X," "The Green Splotches," "Skylark" and "Skylark Three," "The War of the Worlds," "The Gostak and the Doshes," and others commonly listed as "best" stories. What I'm getting at is that no single number ever included many of them, and we could scarcely expect it now.

Moreover, we do continue to get good stories. "Beyond the End of Space," "Stellarite," "The Memory Stream," "The Man from Tomorrow," "Mother World," and that microscopic gem, "Souls Aspace."

Neither am I particularly concerned when an author takes liberties with a theory. After all, we don't know the theories are correct, and "fiction" is just as important as "science" in the compound word "science-fiction." I do think, however, that misstatements of facts should usually be avoided. Harl Vincent in "Return of the Comet" states that Mar's period of revolution is 224 days, which of course is the period of Venus. It really doesn't make any difference in the story except that Nyu would have been about three times as old as Ridge calculated. It isn't really important. It is almost in the nature of a typographical error, for, of course, Vincent knows better. I won't deny that I enjoy finding errors in stories, but I don't believe in condemning an excellent yarn for one small slip.

I may add that, in my work as a science and mathematics teacher, I find a lot of valuable material in AMAZING STORIES. Keep up the good work.

D. B. Thompson,
Mullen, Nebraska.

(We agree with you that the new cover is, in a sense, more dignified than the old ones, but you must realize that the old ones were plain and simply illustrations of stories in the magazine. There was no flight of the artist's imagination in them, he simply had to follow the text. We are always glad to find that any change we make meets with our readers' approval. Self praise is no praise, but our definite and absolute opinion is, that the present AMAZING STORIES is a great advance over the older issues. We are getting more stories submitted to us than we can take care of and a properly disposed Editor feels very sorry when he has to return so many. We could put down the names of perhaps less than a dozen authors who could fill our pages, but we get very excellent work from writers who are quite new to us, and these we use so that there is no danger of the magazine becoming repetitious. It is easy enough to go back over the last six or seven years and out of nearly one hundred issues take out four or five stories as the best and ask us why do we not do that all the time? The point is not that we are doing it, but that the magazine is certainly averaging higher than it ever did before. We are trying to keep all errors out of the magazine, but some inevitably escape one. The wrongly stated figure is so easily corrected that it can be taken as an author's oversight. The last paragraph of your letter in its few lines tells us what we ought to do and it is no small affair to insure the presence of science in all of the many stories we publish, but we are honestly trying to do so.—EDITOR.)

A Letter of Interesting Criticism

Editor, AMAZING STORIES:

Here comes my second letter to AMAZING STORIES.

I am a little late, but better late than never. I want to congratulate you on the new covers. I had to look three times before I recognized the first issue of the magazine in its new dress. And when I finally did recognize it, needless to say, I was very agreeably surprised.

I was going to write to the Discussions Department about the speed of light, etc., but the letter of E. Caldicott, and that of Noel F. Waite in the April issue so clearly expressed my views, that I could not have added to their ideas.

I was going to write to the Discussions Department is going to be improved upon. I think that it is one of the most valuable parts of the magazine. It is a good thing for those, who are not authors, to be able to air their views, and your ("our" I should say) magazine gives the contributors to the Discussions Department, more opportunity than any other publication that I know of in that line. Then too, I like the editor's comments on each of the letters, even if he doesn't always agree with the writers. Lots of times it gives the writer a new slant on the subject to have his own ideas criticised. I enjoy the Discussions as much as some of the stories.

And now one little criticism. I don't like the inserts between the different parts of the chapters in the stories. For instance the caption "How the offer was received by Ridge Color" and "The manifestation of the Powers" etc. Both in one chapter from "When the Comet Returned." I don't mind a bit having the chapters named, but these captions for separate chapters seem to me to cheapen the stories. When we start a story, we don't need such things to sustain interest. In a newspaper some such thing is needed, but in a magazine story, I don't think so.

I'm going to make this criticism too. I don't like some of Morey's illustrations. In some of his illustrations he shows real merit, but in others it looks as if he was in too much of a hurry to get it done to make an excellent illustration out of them. When Morey first started to illustrate for A. S. I liked his illustrations, and also those of Wesso (of whom I don't see much any more). I have seen some of Wesso's illustrations in other magazines since he quit illustrating for the A. S. monthlies.

Enough for this time, and let me congratulate you once more on the new covers, one of the best improvements that has ever happened to AMAZING STORIES.

James A. Lowe,
545 E. 2nd South Street,
Salt Lake City, Utah.

(We sometimes wonder if the new cover, so radically different from the old one, has acted as a disguise so that old-time readers did not recognize their magazine. We are glad to find that it meets with very general approval. The improvements in the Discussions Department are two-fold. We are giving it more space than ever before, and we are making it more readable by the use of larger type. We have to feel our way and we have formed a pretty definite conviction that the Discussions hereafter are going to be a more important part of the magazine than they have ever been in the past. The interest and merit of them depends on those who write the letters to us. As regards the Editor's comments, I am afraid that if we always agreed with the comment's letters, the comments would make pretty dry reading. You know that difference of opinions adds a flavor to life and literature. It is letters like yours full of intelligent criticism and well thought-out opinions that we find most interesting. We are adopting the system of giving a limited number of the cross-heading to which you make exception. We have felt that they do break up a too solid page and we will wait for more opinions from our readers.—EDITOR.)

Notes by the Author on His Story, "The Last Earl"

Editor, AMAZING STORIES:

If you could allow me the space I would like to take this opportunity to express my appreciation of the manner in which the readers of AMAZING STORIES accepted my first contribution. I wish particularly to thank Mr. Michel for his criticism of "The Last Earl." One of the first things we of the writing profession have to learn is that an ounce of constructive criticism is worth a pound of praise. I might add that, being very vain, we prefer the praise.

From time to time I have read letters from your readers on Science Clubs. Being profoundly interested in science and President of a local Science Club I would be very interested in being informed how these clubs function.

As in the case of the redoubtable Miss Robb my Irish blood will not permit me to let Mr. Michel go unchallenged. Although it is true that the story is weird and eerie I am going to lodge a good old-fashioned Irish balk when he says it is not science fiction. I will take it for granted that Mr. Michel accepts the common theory that the human body contains a soul and that when a person dies the soul leaves the body. If we were to bring a cadaver to life there is no reason to believe that we could bring the soul also since the soul and the body must essentially be two separate parts. What nature of creature a body would be without a soul can only be prophesied. Reasoning that the various digestive juices would have become impotent and the body unable to convert food into blood I advanced the Vampire theory. Associated with the Vampire are the increased psychic powers of hypnotism and mental-telepathy which are becoming very much a part of modern science. As far as bringing the corpse to life is concerned, although I haven't space to go into detail, the Ultra-Violet and Radium Rays and Static electricity have done very extraordinary things to the human body in the way of revitalizing the tissues and restoring the nerves to their proper functions.

Although the story was a rather fantastic conception and it must be admitted that I added a little color there is, as yet, no scientific law which states that it is impossible to bring a corpse to life in the manner I proposed. It must be remembered that we are dealing with subjects, the human brain and the effect of various combinations of rays on the human body, which science still knows very little about. I have written a more explanatory story on the subject which I fancy is rather better than "How To Die Early If At All" and perhaps our editor will see fit to present it to you sometime in the future. That story will, I am sure, convince you that my intentions are super-scientific rather than supernatural.

It gives me pleasure to be associated with the class of authors and editors connected with "Amazing Stories" and, in closing permit me to extend an invitation to the readers of AMAZING STORIES to feel at liberty to write me, either personally or through the medium of the discussions page, concerning any part of my work at any time and I will do my best to answer your queries or criticisms.

Franklin W. Ryan,
828 S. Kalamazoo Ave.,
Marshall, Mich.

P. S.—I appear to owe Mr. Ingersoll, my only retainer in the March issue, a debt of gratitude.

(The Editor thought that "The Last Earl" was quite a picturesque story and of course, all one can do is to place himself in the reader's chair but he cannot put the reader's taste on these matters into his own intellect. He would like to put some of the readers in his chair. "The Last Earl" has received considerable criticism. Many people have objected to it. We are glad to see in your letter that you do find some science in it.—EDITOR.)

The Question of Inhabitants on Other Planets—Aztecs and Atlantians Separate and Distinct Races

Editor, AMAZING STORIES:

Following the example of contributors to your correspondence columns, I venture to emulate them with a word of praise and a mild brickbat or two.

C. Cloukey's "The Swordsman of Sarvon" and W. E. Sander's "Sheridan Becomes Ambassador" are excellent. But, why our earth should be the only planet inhabited by *Homo Sapiens* passes my comprehension. It is written in the Bible, in Genesis, that "God created Man in His Image" and there is no reason why he should not have done the same on other worlds—Mars and Venus in particular. The men on those planets at any rate may be different from us only just as the Chinese and Japanese are different from us. When the Corians and Sarvonians came to Venus as colonists from pre-Hellenic Yatlan, and when the Atlantians made their enforced migration from a drowned earth to the same planet, they found apparently an empty world ready for them. In the last named story, I, as a student of pre-Spanish histories of America, discovered that W. E. Sanders took the Atlantian names of planets and persons from Aztec sources—this sort of thing should be discouraged, as it spoils the tone of the story, there is no possible connection between the Aztecs and the Atlantians. H. Vincent's "Thia of the Drylands" is on a par with the above, though it does not say whether the Martians were aborigines or descendants of colonists from earth.

The first and third parts of Capt. S. P. Meek's "Troyana" are by far the best "scientific fiction" I've ever come across, and I am looking forward to getting the second part. Next come J. L. Burt's "The Lemurian Documents":—No. 1—Pygmalion, No. 5—The Sacred Cloak of Feathers, and No. 6—Prometheus, again, I look forward to getting Nos. 2, 3 and 4.

Well, I wish you many years of success in "science fiction"—hope you will provide more stories of the "Troyana" type.

W. N. Warrington,
"Holmwood" Glenburn Rd. W.,
Bearsden, Nr. Glasgow, Scotland.

(We received a good many letters from English writers and we are favored by communications from the other side of the world from Australia and New Zealand, but it is seldom that we get a letter from Scotland. There is little use in speculating on the condition of other planets as regards inhabitants—Mars would be pretty chilly, we think, Venus would be pretty hot, except as protected by its cloud blanket, while it would be hard to imagine anybody living on Mercury, which is so near the sun or on the outer planets which are so far from it, unless they had some sort of heat of their own they would seem to be decidedly arctic. You have picked out very good authors. We shall hope to hear from you again.—EDITOR.)

A Letter of True Encouragement—and Sometimes We Think We Need Some

Editor, AMAZING STORIES:

I am sending you this fat, bulky letter to tell you that the April issue of AMAZING STORIES was the best published since the "Skylark" stories appeared.

"Ancients of Easter Island," was not the best story but it had the best material.

You know, I am not a scientist, nor do I have a lot of letters after my humble Anglo-Saxon name but sometimes hunches hit the point with uncanny accuracy. You might be interested in knowing my theory of the statues on Easter Island.

The Polynesian race should never be thought inferior to the Nordic—or white. They are referred to as brown, but I daresay that if you take a colony of Italians, or Greeks—let them tan in the Pacific sun for a couple thousand years—and they'll be just as dark as any Polynesian you ever saw. They look for all the world like a Mediterranean strain of whites. I believe that long ago before the flood, that the Bible speaks of, the Polynesians occupied a vast continent in what is now the Pacific. They had a wonderful civilization and had progressed high in the arts. Some great convulsion of nature destroyed practically all of them—the flood told of it in the Bible. I think some of the survivors are the Incas of Peru and the Maoris are another stray remnant. This theory isn't original but it is probably true. It is certain that mankind was great even before the Romans and Greeks. This is a deeply interesting subject and a mighty mysterious one. It can only be solved by under-sea excavations. And who can do this?

I was startled to see another science-fiction monthly collapse and go the way of all pulp. Before that, a brother of it had reduced its price. I certainly hope that you don't reduce 10 cents in price and 20 cents in quality, for that is exactly what many publications are doing. AMAZING STORIES is, I believe, the best magazine of its type. In spite of its name, it is very sedate—not lurid or cheap—and it can be laid with pride upon the table of science.

All the authors writing for A. S. are good. But naturally, there is no accounting for tastes. People will always send "knocking" letters. I never liked Morey as an illustrator. Nor Wesso or Paul either. Paul's characters always had big foreheads and wavy hair. Wesso's had "gangster" noses. Morey's outside covers are good, however. Muller, I believe, was the only artist I really liked. But—majority rules.

That terrible fiend, Ackerman, had three letters in the April issue. Darrow, his wolfish henchman, crossed the tape a close second, with two. I like them, though. They like science-fiction and make it emphatic, and their letters are interesting. If every reader takes as much interest in A. S. as they do—we won't have to worry about the depression—what? (with apologies to Johnny Charford—colloquialism-conscious Cockney) Here's hoping that some day the man who wrote "Skylark" will return.

Yours editorially,
Elmer T. Canavin,
1737 Edgewood Street,
Philadelphia, Penna.

(This letter covers so much ground and covers it so well that it makes an adequate reply at once unnecessary and difficult. It certainly speaks for itself and in the heading we tell of needing some encouragement and we can assure the readers of Discussions the encouragement is precisely the thing we want although we print lots of scolding letters, feeling that Discussions as a part of the magazine should be true.—EDITOR.)

Omega the Man

Editor, AMAZING STORIES:

My wife and I have just finished the second reading of "Omega, the Man!" in the January issue after passing it around among our friends.

The second reading was to try to find some flaw in the story. Although I am not a scientist, I am interested in futuristic scientific fiction.

This story carries out logically the probable development of instruments and machinery now in everyday use. Considering only the development of the past thirty years and remembering that each year sees much faster improvement than any previous year why there is no limit to what the future may have in store for the human race.

No one actually knows what monsters exist, either in the depths of the ocean or in unexplored portions of the earth; therefore, the monster is not an entire impossibility.

Every one knows that the human race is gradually becoming mentally stronger and physically weaker so the story fits the facts already known like a glove.

We await anxiously more from the pen of the same author.

Mr. & Mrs. William F. Smith,
1910 Kalorama Road, Apt. 204
Washington, D. C.

(There was quite a touch of the pathetic in "Omega, the Man." It has met with high approval and also with criticism from our readers. Sometimes severe criticism is really unintended praise. We agree with you in your estimate of the story.—EDITOR.)

A Cheerful Letter from the Possessor of a Cheerful Name

Editor, AMAZING STORIES:

The story "The Tomb of Time" is most interesting and reminded me of two of my childhood favorites—"She" by Rider Haggard, and "A Journey to the Center of the Earth," by Jules Verne.

The descent into the caverns and the crossing of the abyss reminded me of "She."

The subterranean "world," so to speak, with its flora and fauna suggested Verne, even the volcanic eruption and the escape on the raft.

I enjoyed Williamson's story the "Scarlet Star" very much; as I did his previous writings.

I have read AMAZING STORIES since it was first published. I was even able to obtain it in Paris at the newspaper Kiosks, so that while abroad, I read it regularly.

J. M. Wohlgemuth, M. D.,
24 So. Elm Street,
Hinsdale, Ill.

(If we received enough of such letters as yours we would become too self-satisfied we are afraid, and that is something that should be warded off from an Editor. The Editor should always feel that there is more and better things ahead for his readers. You may rest assured that you have given the normally "overworked" Editor much comfort by what you have written. The note about the Paris Kiosks carrying it is very interesting.—EDITOR.)

Great Refracting and Reflecting Telescopes—The 200-Inch Quartz Mirror Reflector in Prospect

Editor, AMAZING STORIES:

This refers to the story "Stellarite" in your March issue. This is one of the most excellent I have ever read in any of the "Science Fiction" magazines. Its excellence is due to its high degree of scientific probability, to its freedom from the gruesome and horrible details which mark so many of the other stories, and to the fact that the author is not afraid to recognize God in the universe and to portray the hero and his associates as giving thanks to him for the inspirational ideas which effected their deliverance from a bad situation. I would rate this piece of work very high.

I am fond of science fiction, but many times throw the magazines away in disappointment because of the depressing

Describes Wild Scene In Hospital Room As Patient Walks Again

Had Been Bedridden for Weeks—Nurodyne Banished Pain Quickly

THE discovery of Nurodyne is certainly a blessing to humanity. Such surprising, quick results are reported that every person suffering from neuritis, lumbago, rheumatism, neuralgia, gout, sciatica, and other pains and aches should get this new scientific formula at once. Leg pains, stiffness, burning acidity, itching, nervousness, getting up nights, circles under eyes—these are warnings of excess uric acid in your blood.

Unlike old-fashioned powders, pills, capsules and liquids that are uncertain in results, Nurodyne ends suffering quickly and surely. A remarkable thing is that it does not contain opiates or narcotics; yet relief is felt within a few hours.

Cause of Suffering

There are two distinct kinds of ailments to which the term *rheumatism* is applied. One kind, which includes *acute articular rheumatism, rheumatic fever* and *tonsillitis* is caused by germ *infection*. In the other kind, which includes various painful conditions of the muscles, nerves or joints, the trouble is due to acid intoxication (excess uric acid in the blood).

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nature of some of the stories or their flagrant violation of fundamental principles.

There is one minor error of fact in this excellent story which I should like to bring to your attention. On page 1130, second paragraph, he speaks of the "thirty-six inch refractor of the Yerkes Observatory at Green Bay, Wisconsin." This should read: "the forty inch refractor of the Yerkes Observatory at Williams Bay, Wisconsin."

Williams Bay is a town at the head of a bay of the same name on the north shore of Lake Geneva, Wisconsin. The observatory is located on a high elevation along the north shore of the lake proper, west of the bay, and about a mile from the little town. This observatory is owned and operated by the University of Chicago. Its forty inch (lens) refracting telescope is the largest of its type in the world. I believe Lick Observatory in California has a thirty-six inch refractor.

Since the manufacture of these two notable telescopes the development of large refractors has been discontinued, the later efforts being directed toward the building of large reflectors. The most notable of these is the one hundred inch glass mirror reflector at Mount Wilson —referred to in "Stellarite," but if everything goes as planned this will soon be greatly surpassed by the two hundred inch quartz mirror instrument now under construction by the General Electric Company and others.

Very truly yours,
F. W. Merrill,
1134 Oakdale Drive,
Fort Wayne, Indiana.

(We thank you for your correction. Quartz promises to play a very important role in astronomical work. The mineral now that it can be handled efficiently surpasses glass from several points of view.—EDITOR.)

A Letter from a Young Reader

Editor, AMAZING STORIES:

I am probably one of your youngest correspondents, yet I understand your magazine very well. In your March, 1933, issue, I have only one objection to make, that is "In the Scarlet Star." Wouldn't it have been far more interesting, if you had gone with the man through the crystal instead of having him tell his adventures? Now I'll give you a bit of praise.

I shall begin with the first story in the March issue and go through to the last one.

The first story, "The Tomb of Time" is a very interesting story. I have read Jules Verne's book "Journey to the Center of the Earth" but it can't compare with "The Tomb of Time." The next story, "Beyond the End of Space", is exceedingly interesting and I wish the April issue would hurry and come out. "In the Scarlet Star" and "Stallions Trappings" are not quite as good as the rest of your stories. "Stellarite" has a good plot and if "Radicalite" was as good as this story I am sorry to have missed it. "The Flame-Worms of Yokku" was too short and I hope you have a sequel to it.

I have a suggestion to make. Why don't you have a few movies made and use your stories for the plot? I would like to see them.

Edward Fowler,
Washington, Conn.

(This very nice letter contains the statement that it is from a very young correspondent. He is like many of our correspondents as he follows the system of giving his opinion on the merits and demerits (only he says nothing about the last) of AMAZING STORIES. One story he says is too short, but a good short story is supposed to be pretty near the top of the ladder of merit and comparatively few can write them. Movies are made by the regular companies—we are not in a position to make them, but some of them should soon be produced.—EDITOR.)

An Australian Reader's Views About AMAZING STORIES and Its Ways

Editor, AMAZING STORIES:

I have been a keen and regular reader of our magazine for just a year, and have read a few intermittent copies prior to that. This is my first epistle to you, and I intend throwing a few compliments around.

I am sixteen and have just finished my fifth year at the Sydney Technical High School and would like to thank you for the amount of help you have given me in Physics and Chemistry. I am never satisfied that I have read a number until I can answer every question in your questionnaire. I am pleased to call this "effortless learning." There is no hard "swotting" or headaches from textbooks, but pleasant and interesting reading. Your editorials are always instructive and are the first thing I read.

It is rather late to bring this up, but in your August, 1932, issue, a certain Mr. Bill Bailey objected to stories of "unusual medical operations." I can only ask if he read "The Ambidexter" and "A Matter of Nerves?" The former was absolutely outstanding.

I like your attempts to fill up space, witness, "Omega" and "The Doubt."

Please, a sequel to "World's Adrift." I reveled in it.

Cheers for Dr. Smith against Miss Robb. Every nation, even England, uses slang and we Australians contribute our share! "Ca ne fait rien."

Also I don't sympathize with the moaners who don't like to see everybody and everything in our magazine belong to you Yanks. It is only natural, your authors being American, writing for an American magazine, which has its greatest sales in America.

I'll close this worthless letter now by wishing you every success.

Maxwell S. Browne,
167 Stanmore Road,
Stanmore, N.S.W., Australia.

(This is a letter from Australia. It is a satisfaction to us to find that our work is appreciated on the other side of the Pacific Ocean. England is certainly waking up to Amazing Stories and we hear very often from Australia and New Zealand. The short, short stories to which you refer we considered extremely good and we are desirous to make such narratives more or less one of the features of the magazine. We appreciate your kind wishes, but we have not observed personally that our magazine is provincial in any sense. The authors as a rule are Americans which is quite natural, but recently we have been receiving a good deal of material from England. We do not perceive any great difference between the way the English author and the American put the narration. Learning from our questionnaire may be effortless, but short as it is, the preparing calls for considerable effort. —Editor.

The April Number Liked

Editor, Amazing Stories:

I enjoyed your April number immensely. The outstanding story is "Memory Stream"; I like Warren E. Sanders' way of telling a story.

Would it be possible for you to enlarge the cut of Jules Verne's tombstone on your frontispiece; to use as a picture in a den, portraying the immortality of science fiction; magazine covers simply will not do to frame.

By the way, to the old readers who have old copies of Amazing Stories I would like to say that I have practically every issue of another science fiction magazine which I would like to trade for Amazing magazines I have not read. "Land That Time Forgot" sold me to Amazing Stories, and I've read them on and off ever since then, around '27.

Harvey Haggard,
940 5th St.,
San Bernardino, Calif.

(You could easily have the Jules Verne tombstone produced in double or more its present size by photography or photostat; it would give you a very good picture for framing. We hope you will hear from some of our readers about the trading you would like to carry out.—Editor.)

A Letter from a Reader Devoted to Interplanetary Travel

Editor, Amazing Stories:

I am a reader of Amazing Stories. I am mainly interested in space travel, but I am also interested in its possibilities for interplanetary travel. I can find very little concerning research, experiment, studies and theories on this subject anywhere.

I believe I read about an Interplanetary Association. Can you tell me if there is one and what it costs to join? Do they keep you informed on all new research and experiments in this field?

Will you also inform me if there are any papers, magazines or books on this subject?

I have read the new book which came out "The Conquest of Space."

I see such magazines as the *Popular Science* or *Popular Mechanics* has little or no news in this line.

H. Halvorsen,
354 Court Street,
Brooklyn, N. Y.

(It is unsafe to say that anything will not be done some time in the future, but it is a very safe assertion to say that it will be many generations before the most elementary experiments will be made in the line of interplanetary travel. We hope that this letter will bring you correspondence from those interested in this subject and you may thus obtain the information you desire.—Editor.)

A Letter of Well-Thought-Out Criticism

Editor, Amazing Stories:

You've printed a story that I think is going to set everyone raving. It's extremely difficult to produce anything new along the stf. line nowadays, but Julian Kendig, Jr. (I'll remember that name) has just about done it. "The Eternal Mask" is *exceptional.* The opening pages are mystifying and intense: will that Moon fall or not? and why is Secretary Lamar so positive it won't? And then the amazing explanation of it all! The story might well end there; but, no, it takes us "around the Moon" for more moving adventure. It has some interesting theories and worthwhile ideas, in addition, and in all ways is exceptionally satisfying.

"Souls Aspace" is the other wonder story for the issue. Brief, compact, it has a novel idea briskly, thoroughly, and interestingly told. I would like to see more such one or two page stories.

Come to think of it, the February number contains *another* gem. Gosh but you're getting good! This one comes wrapped up in the form of a poem. I mean that one about "Higher Mathematicians." It is roaringly funny, and expertly conceived. E. M. Camp, Bob Olsen, and "The Planet Prince"—won't you urge them to write more fantasy rhymes?

Speaking of Bob Olsen: I am most irritated that his "Four Dimensional Escape" doesn't appear in the Quarterly as slated. It'd be bad enough if it's been scheduled for the monthly, but to have to wait three months (or is it six, now?) for an Olsen Fourth Dimension tale....!

Don't think the second new-type cover so symbolical of Science Fiction as the first, but it's good. And what an issue!

Forrest J. Ackerman,
530 Staples Avenue,
San Francisco, Calif.

(It is very seldom that we get a letter like yours in which you think out the criticism on each story so thoroughly. We have felt that Amazing Stories is absolutely holding its own. We have excellent authors, whom in a sense we regard as our special writers and whose work is admired by almost every reader; in other words, we feel that Amazing

Stomach Disorders Threaten His Life Says N. Y. Patrolman

"I tried everything," says Officer David R. Caldwell, 2309 Holland Ave., New York City. "I suffered from gas in the stomach and heartburn so bad that I could hardly stand it. My case was diagnosed by one doctor as ulcers, another said I had gall stones. One went so far as to tell my wife that I had cancer and had only a short time to live. I suffered much agony and lost weight until one day I saw an advertisement in the New York Daily News, by the Udga Co., St. Paul, Minn. I wrote for their treatment and thanks be to God I did, for today I am a different man. I have no pain, can eat anything and I am getting back to my normal weight."

DAVID R. CALDWELL

Acid Stomach Afflicts Millions

Hyperacidity (acid stomach) is, as every physician can tell you, the curse of millions. It is the most common cause of stomach or gastric ulcers as well as many other distressing conditions and there are comparatively few adults who can truly say it has never troubled them. In addition to stomach ulcers, acid stomach is often the direct cause of gas pains, dyspepsia, poor digestion, pains after eating, bloating, belching, gnawing pains, heartburn, gastritis, sour stomach, constipation, etc.

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To combat these conditions you need a treatment that will first counteract or neutralize the excess acid secretions and then protect, soothe and tone the membranes or stomach lining in order that the process of healing may take place. This is the function of the Udga Treatment and the excellent results it has produced in so many thousands of cases are due to this double acting feature.

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NEWELL PHARMACAL COMPANY
Dept. 850 A S St. Louis, Mo.

Stories of 1933 is going very well, or doing itself proud as the colloquial expression has it, and your letter certainly confirms that view. We thank you sincerely for it.—Editor.)

Criticism Like That of the Writer Below Is Always Welcome

Editor, Amazing Stories:

Congratulations Amazing Stories! Congratulations A. Sigmond!

The new covers are super O. They certainly are an improvement on the old style covers. These covers are worthy to bear the name of Amazing Stories.

A word about the "Pool of Death," by Bob Olson in the January issue. It was a fine story. It kept me in half suspense till the end. But Amazing Stories made a slight mistake. The illustration in the beginning of the story took away some of the surprise which the end of the story holds for us. I never would have guessed the outcome of the story if it was not for that illustration.

"Omega, The Man" was a story of a new type. It was excellent. "The World of the Living Dead," by Repp, was one of the best stories I have read in Amazing Stories for a long time. "Souls Aspace" was the best one-page story I have ever read. More of those, please. "The Ho-Ming Gland" was fair. Please Mr. Editor, see if you can't publish some stories of Otis Adelbert Kline in your magazine.—And A. Merritt, too.

Please take my criticisms with good feelings.

Amazing Stories forever.—

Donald Metz,
38 East 85th Street,
New York City, N. Y.

(Most people who write to us about the new covers, praise them highly, although we have received some letters expressing their desire for the old covers. Curiously enough, it has occurred to the Editor that there is danger in the picture disclosing the end of the story. In a short story, the reader, as a rule, should be kept in suspense up to the last. We hope that you will continue to be a friend of our magazine. We certainly appreciate comments that are so well thought out as yours.—Editor.)

The Science Fiction Digest* and *The Time Traveller

Editor, Amazing Stories:

During the past few years, there has grown up in this country a class of literature—or reading matter, if you will—known generally as science fiction.

It is hardly necessary to define the term to readers of this magazine; but it may be said to include all fiction of a scientific or fantastic nature. Stories of this type are not in themselves a new development in literature; they have appeared in one form or another since man began to give play to his imagination.

It is only recently, however, that science fiction has captured public interest to any noticeable degree. There are no less than seven magazines now using science fiction, either exclusively or as a regular part of their contents. And there is a growing number of books, plays, and films of the science-fantasy type.

In view of this wide current popularity of science fiction, it was deemed advisable to launch a magazine treating all the varied phases of the subject and appealing to the interests of its many devotees. And so came into being *Science Fiction Digest*—the only fan magazine of its kind in the world. (Combined with *The Time Traveller*, October, 1932.)

Science Fiction Digest offers to fans exclusive news of what's doing in the world of science fiction; advance information on the many stories scheduled for publication in Amazing Stories; details of interviews with such celebrities as Dr. T. O'Conor Sloane, Dr. David Henry Keller, A. Merritt, Hans Waldemar, Wesso, Nathan Schachner, and Arthur J. Burks; exclusive biographies of Francis Flagg, R. F. Starzl, L. A. Eshbach, Bob Olsen, Edward Elmer Smith, Ph.D.; John Taine, Jack Williamson, Edmond Hamilton and others; particulars concerning the forthcoming scientifilms "King Kong," "Automaton," "When Worlds Collide," "The War of the Worlds," and "The Time Machine."

For science fiction writers S. F. D. reviews their currently appearing work, gives advance notices of their new stories, gives bibliographies of all their published writings, and features articles describing their careers, hobbies, etc.

Science Fiction Digest offers for collectors a department devoted exclusively to collectors of scientific fantasy, through which they can obtain, by trade or purchase, any desired story from other fans throughout the world, as well as full information on rare classics.

For all information as to subscription rates, etc., address:

Science Fiction Digest,
Mortimer Weisinger,
Associate Editor,
117-26 134th Street,
South Ozone Park,
New York.

(This is a very clever little magazine. The Editors are remarkably *au fait* on all that is doing in our branch of literature, and we have had the pleasure of a most interesting visit from Mr. Weisinger.—Editor.)

BACK NUMBERS OF AMAZING STORIES WANTED

Editor, Amazing Stories:

I am trying to get the first few issues of Amazing Stories, and would like to know if you have any of these on hand. From my records, the first issue was April, 1926. It is the one and the succeeding ones I wish to obtain. I would be very much obliged if you could supply me with this information. If you do not have them, can you put me in touch with someone who has? I am an ardent reader of this magazine and am trying to make up a complete collection.

If you do not have these issues, will you please tell me the dates of those you hav?

Silliam Dukstein,
2020 McKinley Ave.,
Lakewood, Ohio.

(We have very few of the back numbers of Amazing Stories and we are publishing your letter in hopes that some of our subscribers and readers who have back numbers will be willing to supply you with them. You are right in the statement about the date of our first number. There have been a number of demands for back issues, as you will notice, if you will look through our correspondents' columns. If you will drop a line to the Manager of our Subscription Department at this address, he will give you the dates of the issues which he has, though we do know that he has very few.—EDITOR.)

A LONG LETTER FROM THE ANTIPODES REPRESENTING "A CUDGEL ON DEFENSE OF EDWARD ELMER SMITH"

Editor, AMAZING STORIES:

May I wield a cudgel in defense of Edward Elmer Smith? It is about time someone put in a good word for him. He is one of the best liked of all your authors, yet everyone who writes to Discussions seems to delight in taking a nibble out of him, even if they can't manage a full-sized bite.

Personally, I consider him the best of all your authors, and I have very good reasons for my choice. First of all, of the only three of your authors who know the first thing about literature (Smith, Taine, and Coblentz). Dr. Smith is by far the best. When you have read one of his yarns. you feel as though you have lived with his characters, seen the same sights, felt the same emotions. Which, sad to say, is not the case with Messrs Arcot, Morey, Wade. and Fuller of his muchly overspoken opponent. Dr. Smith has the knack of writing a connected yarn that flows along smoothly, leading up to the big points and then gathering speed for the next thrill, which, again, is not the case with Mr. Campbell's yarns (text books?). Lest I be accused of bearing the said Mr. Campbell a deadly hatred, let me say that the fault runs rife through seven-tenths of the ranks of writers.

Another point of superiority of Dr. Smith's yarns is that the science in them is practicable. There are three divisions of science fiction: (a) the yarn with a scientific conception but no technical support; (b) the wildly theoretical yarn; (c) the practical yarn.

Unfortunately the power of the first class is increasing (probably because such are easier to write) and while the second class is not so strong, it is undesirable, because it develops into science fiction without a story. "Islands of Space" and "Invaders From the Infinite" are the best examples of this (Mr. Campbell again!). Cosmium is all right to read about, but it goes in one ear and out the other. But take Dr. Smith's space routine, so exemplified in "Spacehounds of IPC". It not only makes the story more natural, but it is really a contribution to science in that it more nearly approaches an accurate forecast of the future than does bound light, or cosmium, or artificial matters. Besides that, it is a really novel and arresting method of bringing home the realities (and not the merest of bare possibilities, Mr. Campbell) of space travel. In short, Dr. Smith writes science-fiction, and Mr. Campbell writes pseudo-science-fiction. It seems that some of your authors have caught on to Mr. Campbell's habit of cramming a yarn full of pseudo-science, notably a piece of infantile futility called "The War of the Universe." Tell them to lay off it, and remember that even a science-fiction story needs a plot. John Taine shines notably at having a really interesting thread of intrigue and complication running through his pages.

May I digress from the subject of Dr. Smith for a moment and give your authors a word of advice which the mention of John Taine brought to mind? They all treat their subjects too hurriedly. Think of "Seeds of Life" in their hands! I shudder. It would have been passed over in a dozen or a score of pages, and only the obvious and outstanding points in regard to evolution and the genesis of life would have been used, while the subtle details that turned it into a classic would have passed unnoticed.

So many of your authors suffer from this sease that we have arrived at the state of e being nothing new under the sun. Every second yarn is just an old one rehashed, because some one happened to see some aspect of one of the stock materials (atomic power, telepathy, time travel, etc.) that the previous writers left untouched. I will admit, of course, that some themes have a wide range of possibilities, but the great mass of them could, and should be cleared up in three or four yarns instead of three or four hundred.

Getting back to Dr. Smith, my blazing eye falleth upon two effusions from a certain Mistress Robb, who objects in pithily feminine accents to Dr. Smith's use of the language. Go away, Miss Robb, I don't want to play with you. But, before you stump off in high dudgeon, let me inform you that, believe it or not, people of sane mind, wholesome moral character and non-criminal tendencies do actually say such things as Stevens and Co. give voice to. And, also, they are not the left-overs of a packet of gutter-scrapings thrice distilled as seems to be the general impression. At any rate, I like it, so please don't argue or I will get exceedingly rude, because I do not possess Dr. Smith's chivalry in letting you off with a caution.

Vive la Smith! Vive Seaton! Vive Stevens! Vive Du Quesne! (I wish he hadn't been bumped off) Vive "the gang" and "the bunch" and the "Spacehounds" and the "Skylarks" and all of 'em.

Just in case Mr. Campbell is sharpening his teeth in preparation for gastronomic operations upon my innocent self, I really do like his yarns. Paradox? I'll tell the world!

George R. Turner,
67 Highbury Grove, Prahran, S1.
Melbourne, Victoria, Australia.

(We certainly enjoyed your letter because Dr. Smith was one great favorite of our readers and we are only sorry that he is so much occupied with his professional work that he cannot give us more. We think you are a little hard on Mr. Campbell. You must remember that our space is limited so our stories cannot be too long. Especially does this apply to Mr. Campbell's stories which you undoubtedly have noticed are quite long and we are glad to see that after what you said in criticism of his efforts, you come back and say something good about them. Poor Miss Robb has been attacked by a number of our readers and one thing to be remembered is that Dr. Smith can defend himself excellently; not only because he has a power of defense, but because he has an easy subject to defend in his excellent work.—EDITOR.)

NOTES ON STORIES AND ON ART WORK IN AMAZING STORIES

Editor, AMAZING STORIES:

I have been a steady reader of AMAZING STORIES for the past four years and have a compliment to give you for such stories as "Airlords of Han," "Skylark of Space," and "Monorail." The other stories have been good, but these stand out in my mind because of their superior qualities.

The best authors in my estimation, are: Francis Flagg, Harl Vincent and Dr. Edward E. Smith. The latter writes classics, so to speak, and he really should write more.

The general make-up of "our magazine" is *most Excellent*, with one exception, illustrations. Morey is a good artist, I admit, but he could do much better. Honestly, Mr. Editor, you should curl up in a corner and cry. I agree with some readers, whose letters appeared in a recent issue, a book form of "Skylark of Space" should appear.

Donald Stewart,
903 8th Avenue,
San Mateo, Cal.

(The stories you mention as standing out are certainly a good selection. Criticism from a steady reader always excites respect and we are very glad to receive criticisms "pro" and "con" from such readers. One curious thing about it is that the stories appreciated by such readers as the writer of the above letter are often unfavorably commented on by those, it is fair to say, who are far less competent to judge. It is impossible for an Editor, sitting in his office, to be certain how his selection of stories will be received. It may be said that the Editor does his best, but the writer of these comments has learned from sad experience to distrust anybody who makes that plea. In this office we have a complete file of AMAZING STORIES bound and on our book shelves. Turning over the pages of the early issues, the recent ones appear to be incomparably better. Under the circumstances, we feel that the magazine is doing remarkably well.—EDITOR.)

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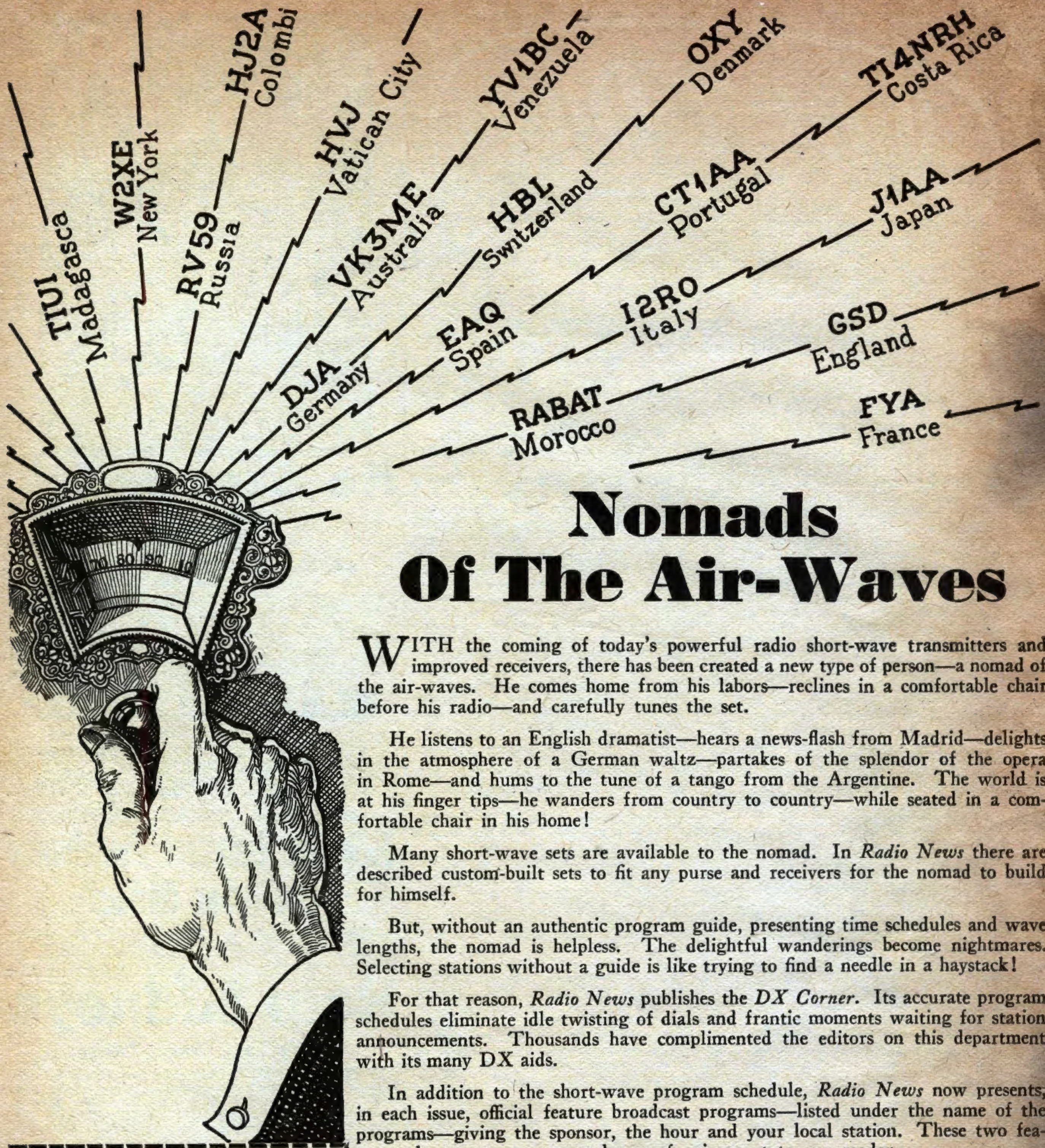
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